

**EFFECT OF MICROFINANCE CREDIT ON POVERTY AND INCOME
INEQUALITY OF SMALL-SCALE FISH FARMERS IN NIGER STATE, NIGERIA**

BY

MOSHOOD Halimat Abisola

MTech/SAAT/2018/8173

**DEPARTMENT OF AGRICULTURAL ECONOMICS AND FARM
MANAGEMENT FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGER
STATE, NIGERIA**

AUGUST, 2023

**EFFECT OF MICROFINANCE CREDIT ON POVERTY AND INCOME
INEQUALITY OF SMALL-SCALE FISH FARMERS IN NIGER STATE, NIGERIA**

BY

**MOSHOOD Halimat Abisola
MTech/SAAT/2018/8173**

**A THESIS SUBMITTED TO THE POSTGRADUATE SCHOOL, FEDERAL
UNIVERSITY OF TECHNOLOGY, MINNA, NIGERIA IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER
OF TECHNOLOGY IN AGRICULTURAL ECONOMICS AND FARM
MANAGEMENT**

SEPTEMBER 2023

DECLARATION

I hereby declare that this thesis titled “Effect of Microfinance Credit on Poverty and Income Inequality of Small-Scale Fish Farmers in Niger State, Nigeria” is my original work and it has not been presented for any other qualification anywhere. Information from other sources, either published or unpublished has been duly acknowledged.

MOSHOOD, Halimat Abisola

M.TECH/SAAT/2018/8173
FEDERAL UNIVERSITY OF TECHNOLOGY,
MINNA, NIGERIA.

SIGNATURE & DATE

CERTIFICATION

The thesis titled “Effect of microfinance credit on poverty and income inequality of small scale fish farmers in Niger State, Nigeria” by MOSHOOD, Halimat Abisola (M.TECH/SAAT/2018/8173) meets the regulations governing the award of degree of Master of Technology (M.TECH) of Federal University of Technology, Minna and it is approved for its contribution to scientific knowledge and literary presentation.

PROF M.A. NDANITSA
MAJOR SUPERVISOR

SIGNATURE & DATE

PROF E.S. YISA
CO-SUPERVISOR

SIGNATURE & DATE

PROF M.A. NDANITSA
HEAD OF DEPEARTMENT, AGRICULTURAL
ECONOMICS & FARM MANAGERMENTS

SIGNATURE & DATE

PROF J.H TSADO
DEAN SCHOOL OF AGRICULTURE AND
AGRICULTURAL TECHNOLOGY

SIGNATURE & DATE

ENGR. PROF. O.K. ABUBAKRE
DEAN, POSTGRADUATE SCHOOL

SIGNATURE & DATE

DEDICATION

This research work is dedicated to my lovely family for their support, love and words of encouragement to make this academic endeavor a successful one.

ACKNOWLEDGEMENTS

My utmost gratitude goes to Allah who saw me through this academic pursuit. I appreciate my Head of Department, PROF M. A. Ndanitsa who is also one of my supervisors, and PROF E. S. Yisa for their support, guidance, tutoring, mentoring, and understanding throughout this research works. They both are indeed mentors and I am deeply grateful for the knowledge gained from their teachings and coaching. I equally appreciate all my lecturers in the Department of Agricultural Economics and Farm Management for their knowledge and guidance throughout the programme.

I am eternally grateful to my husband, Mr. Moshood, Tajudeen Babatunde, who encouraged me to further my education to master's level and for the love and support. I am also indebted to my parents, Mr. & Mrs. Abdulrafiu Sanusi for their love and support. I also appreciate my Father inlaw, Alhaji Moshood Sakariyau for their love and support, and to my late mother-in-law, Alhaja Maryam Moshood, I pray her soul will continue to rest in jahanatu firdaus. I am also indebted to my siblings, Miss Barakat, Mr. Abubakar-Sodiq, Miss Rofiat, Miss Rukayat, Master AbdulMujeeb, and my inlaws, Mrs. Zainab Shittu, Mr. Abdulhafis, Miss Faridat and Miss Khadijat for their love, support, and prayers. I especially appreciate the love and endurance of my kids Nabeelah and Maryam throughout the programme.

I appreciate the support and assistance given to me by my colleagues in the department, Mrs. Jimoh Hamdalat, Mrs. Chizea Chizobam, Mr. Lawal Ahmed, Mr. Zakari kuta, Mr. Illiya Enock, Mr. Taofeek Yusuf, Mr. Augustine Apuyor, Mr. Mohamed and Mr. popoola David, I am grateful for this great opportunity and for the support all the way.

ABSTRACT

This study was carried out to examine the effects of microfinance credit on poverty and income inequality of small-scale fish farmers in Niger State, Nigeria. A multi-stage sampling technique was used in selecting 117 beneficiaries and 117 non-beneficiaries of the microfinance credit scheme. Primary data for the study were collected using interview schedule with the aid of questionnaire. Descriptive statistics were used to examine socioeconomic characteristics of the fish farmers and factor hindering access to microfinance scheme, the Gini coefficient was used to determine the likely differentials in income among the fish farmers while the Chow test was used to determine the effect of participation in the Microfinance credit scheme on the income of the fish farmers. The Foster, Greer, and Thorbecke (FGT) index was used to examine the poverty level of the fish farmers and the Propensity Score Matching Method (PSSM) was used to determine the effect of the scheme on poverty alleviation. The results of socioeconomic characteristics show that the mean age of the fish farmers was 40 years; the majorities (83.3%) of the fish farmers were male while 84.2% were married. In addition, 86.4% had one form of education or the other. The mean household size was five persons while the mean years of fishing experience was 15 years, 53.7 were members of cooperative society and 77.4% had extension contact while only 8.6% of the beneficiaries received credit above ₦400,000 from Microfinance Banks (MFBs). The result of Gini coefficient was 0.47 and 0.50 for the beneficiaries and non-beneficiaries, showing that income was more equitably distributed among the beneficiaries than the non-beneficiaries. The Chow result shows that the scheme had a positive and significant effect on income of the fish farmer. The results of the FGT shows that a higher percentage of the non-beneficiaries (53.9%) were poor compared to the number of the beneficiaries (36.8%). The result of the PSMM shows that the scheme had a positive and significant effect on poverty alleviation of the beneficiaries. The hypothesis tested indicates that there was a significant difference between the income of the beneficiaries and non-beneficiaries in the study area. Among the majors hindering access to the scheme are high-interest rates, types of collateral and amount of loan provided. This study thereby concludes that the microfinance credit scheme increases the income of the beneficiaries and thereby reduces their poverty level in the study area. The scheme however was unable to bring all out of poverty as there were still some living in poverty in the study area. In line with the findings, the study recommends that the interest rate offered by the MFBs should be reduced, the government through the CBN should provide more fund for on-lending to the fish farmers. More MFBs should be established by the private sector to reach out to higher populations. Furthermore, the lending condition should make stakeholders such as co-operative groups serve as an intermediary and advised less stringent to the farmers.

TABLE OF CONTENTS

TITLE	PAGE
COVER PAGE	
TITLE PAGE	i
DECLARATION	ii
CERTIFICATION	iii
DEDICATION	iv
ACKNOWLEDGEMENT	v
ABSTRACT	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	viii
LIST OF FIGURES	ix
ACRONYMS	x
CHAPTER ONE	
1.0 INTRODUCTION	1
1.1 Background to the Study	1
1.2 Statement of the Research Problem	5
1.3 Objectives of the Study	7
1.4 Hypothesis of the Study	8
1.5 Justification for the Study	8

CHAPTER TWO

2.0	LITERATURE REVIEW	10
2.1	Theoretical Framework	10
2.1.2	The linkage theory	11
2.1.3	The esusu theory	11
2.1.4	Non government organization (NGO) theory	12
2.1.5	The progressive lending-banco sol theory	12
2.1.6	Theoretical link between microfinance and poverty reduction	13
2.2	Conceptual Framework	15
2.2.1	Concept of microfinance	16
2.2.2	History and development of microfinance in Nigeria	18
2.2.3	Ownership of microfinance banks	21
2.2.4	Microfinance bank categorization	21
2.2.4.1	<i>Category 1</i>	21
2.2.4.2	<i>Category 2</i>	21
2.2.4.3	<i>Category 3</i>	22
2.2.4.4	<i>Transformation path</i>	22
2.2.5	Impact of microfinance on agricultural production	23

2.2.6	Goals of microfinance	24
2.2.7	Microfinance policy in Nigeria	25
2.2.7.1	<i>Microfinance Policy objectives</i>	25
2.2.7.2	<i>Microfinance policy targets</i>	26
2.2.7.3	<i>Microfinance policy strategies</i>	26
2.2.8	The Concept of Poverty	28
2.2.9	Causes of poverty	30
2.2.10	Measurement of poverty	31
2.2.11	World bank poverty reduction strategy	33
2.2.12	Poverty reduction strategy in Nigeria	36
2.2.13	The importance of microfinance on poverty reduction	38
2.2.14	Impact of micro-finance on poverty reduction	41
2.3	Analytical Framework	44
2.3.1	Income distribution	44
2.3.2	Effect of participation in the scheme	45
2.3.3	Poverty level	45
2.4	Empirical Review of Related Literatures	46

2.4.1	Empirical studies on socio-economic characteristics	47
2.4.2	Empirical studies on income inequality distribution	48
2.4.3	Empirical studies on effect of microfinance credit on incomes and poverty status	49
2.4.4	Empirical studies on factor hindering fish farmers' access to credit	50

CHAPTER THREE

3.0	METHODOLOGY	53
3.1	Study Area	53
3.2	Sampling Techniques and Sample Size	55
3.3	Data Collection	57
3.4	Analytical Techniques	57
3.4.1	Gini coefficient and lorenz curve	57
3.4.2	The Chow test	58
3.4.3	The Foster-Greer- Thorbeeke model	61
3.4.4	The propensity score matching	62
3.4.5	Paired samples t-test	62

CHAPTER FOUR

4.0	RESULTS AND DISCUSSION	64
4.1	Socio Economic Characteristics of the Respondents	64
4.2	Likely Differentials on Income	69
4.2.1	Computation of Gini Coefficient for the Farmers	69
4.3	Effect of Participation in the Microfinance Scheme	72
4.4	Poverty Level of the Fish Farmers	74
4.5	Effect of Microfinance Scheme on Poverty Alleviation	75

4.6	Factors Hindering Small Holder Fish Farmers' Access to Microfinance Credits	76
4.7	Test of Hypothesis	78

CHAPTER FIVE

5.0	CONCLUSION AND RECOMMENDATIONS	81
5.1	Conclusion	81
5.2	Recommendation	81
5.3	Contribution to Knowledge	82
	REFERENCES	84
	APPENDICES	

LIST OF TABLES

Table		Page
3.1	Distributions of the ADP Zones, MFBs and the number of farmers sampled	56
4.1	Distribution of respondents according to their socio-economic in the study area	64
4.2	Distribution of respondents according to their socio-economic in the study area	66
4.3	Computation of Gini coefficient for the fish farmers	70
4.4	Summary of regression results for the fish farmers	72
4.5	ANOVA results for the fish farmers	73
4.6	Effect of microfinance scheme on poverty alleviation among fish farmers	75
4.7	Factors hindering small holder fish farmers' access to microfinance credits	76
4.8	Test of hypothesis	79

LIST OF FIGURES

Figure	Page
2.1 Authors Conceptual Framework	16
3.1 Map of Nigeria, Showing the Study Area	54
3.2 Map of Niger State, Showing the Study Area	55
4.1 Lorenz Curve of Income Distribution Among Fish Farmers	72
4.2 Poverty Level of the Respondents	75

CHAPTER ONE

1.0

INTRODUCTION

1.1 Background to the Study

In Nigeria, Agriculture provides between 80 to 90 percent of the country's food needs, Adebo and Ayelari (2011). It however has diverse aspects and these include fish farming which involves the rearing of fish for purpose of consumption or sale. Fish is acclaimed to be the principal source of animal protein for over one billion people globally and provides many important nutritional and health benefits. Fish has the highest level of easily metabolizable proteins; it is reputed for its high-quality proteins, fats, vitamins, calcium, iron, and essential amino acids. The per capita consumption of animal protein in the country has been put at 5gm per day. The role of agricultural development in terms of growth and poverty alleviation is currently high on policy agenda and roundtable discussions. In Nigeria, agriculture provides the opportunity to stimulate growth in other sectors of the economy and boost food production and security thereby reducing hunger and poverty. Nigeria's agricultural sector provides over 40% of the nation's gross domestic product (GDP) with between 60 and 70 percent of the population productively engaged in farming (Kiplimo *et al.*, 2015). Consequently, a report by the International Development Association (IDA, 2023) confirmed that Agriculture can help reduce poverty, raise incomes and improve food security for 80% of the world's poor, who live in rural areas and work mainly in farming. The success of the agricultural sector to a greater extent depends on the level of access of farmers to agricultural credits, hence, Abula and Ediri (2013) stated that special interest must be paid to accelerating processes of rural community transformation

through poverty alleviation, provision of rural infrastructure, agricultural extension, and development of microfinance establishments to cater for needed agricultural credits of farmers.

Agriculture is an inevitable concomitant to the economies of developing countries as it plays a significant role in providing food to the population and supplying other sectors with raw materials for the production of goods and services (Aminu and Samuel, 2015). In the case of Nigeria, agriculture is a major sector of the economy and impact heavily on global poverty reduction (Oyakhilomen and Zibah, 2014). Agricultural productivity and growth are also hindered by limited access to credit facilities due to their inability to offer acceptable marketable security or collateral. Consequently, small scale farmers are caught in the vicious cycle of poverty, where low level of income leads to a low level of capital investment and low level of agricultural productivity (Samson & Obademi, 2018).

According to data made available by the World Bank (2018), Nigeria produced about 1,169,478 in 2018, which is about 40% of Nigeria's total annual fish demand of about 3.4 million metric tons, the rest of 60% of demand is met through fish importation which Nigeria is one of the largest importers and consumers of fish and fish products in Africa, with a demand estimate of about 1.4million metric tons of frozen fish annually, making the country the largest importer of frozen fish in the world with annual foreign exchange drain of ₦35 billion (filli *et al.*,2015). According to the GDP data released by the National Bureau of Statistics (NBS), (2021), According to the GDP data released by the National Bureau of Statistics (NBS), (2021) for Quarter 1 (Q1) 2021, the fisheries sector had a 3.24% contribution to the country's GDP. This was a positive indicator for the fisheries sector, which had a -3.60% and -2.07% growth contribution in Q4 and Q3 2020. Despite

having a 5.68% contribution in Q2 2020, its total contribution to the country's GDP in the year 2020 was 0.26%. Thus, Nigeria must work to substitute fish imports with domestic production to create jobs and reduce poverty in rural areas where 70% of the population lives and, ease the balance of payments through the implementation of microfinance credit.

Microfinance is the provision of financial services, such as loans, savings, insurance, money transfers, and payments facilities to low income groups. It could also be used for productive purposes such as investments, seeds or additional working capital for micro enterprises. On the other hand, it could be used to provide for immediate family expenditure on food, education, housing and health. Microfinance is an effective way for poor people to increase their economic security and thus reduce poverty. It enables poor people to manage their limited financial resources, reduce the impact of economic shocks and increase their assets and income (Pollinger *et al.*, 2017). Loan funds from formal markets dwindled and borrowing costs escalated while the financial outlays for business enterprises multiplied several-fold due to the ravage of inflation such that only a limited number of entrepreneurs could meet their financial obligations, (Enimu *et al.*, 2017).

Microfinance credit schemes have benefited small-scale farmers in many ways in the past (Oruonye and Musa, 2012). The operational mechanism of farm credit services is changing the context in which the rural economic landscape operates. The past rural credit programme in the country point to the need to redesign or improve the delivery mechanism to minimize institutional barriers and, hence, open access of small-scale farmers to credit. The Majority of poor farmers have continued to face limited access to financial services, and where these services are made available, they are often at very high cost (Mecha, 2017).

Poverty is a major problem confronting the world today. Half of the populations in the world are living on less than \$5 per day (World Bank, 2018), Nigeria is now the world capital of people living in extreme poverty overtaking India with 87 million Nigerians living in extreme poverty compared to India with 73 million (Kharas *et al.*,2018). Although notable progress has been witnessed in poverty reduction, the population of people that are still living in extreme poverty globally is still unacceptably high. However, recent estimates according to the World Bank (2018) shows that 10 percent of the population on the globe lived on less than 1.90 US Dollar in a day in 2015 compared to 11% in 2018. The present democratic dispensation avails successful governments to initiate different poverty reduction strategies to checkmate the rising poverty in Nigeria. One of these anti-poverty reduction strategies is microcredit which is given to support entrepreneurs and reduce poverty. Microcredit from microfinance institutions has proven to be a powerful tool for fighting poverty (Appah, *et al.*, 2012).The challenge of poverty alleviation has remained one of the biggest socio-economic challenges for Nigeria. In an attempt to address the menace of poverty, many governments have attempted to implement various measures aimed at alleviating poverty. These measures have however been met with little success. In this regard, many strongly prefer to start their entrepreneurial activities rather than earn wages. It has also been argued by Audu and Achegbulu (2011) that even where small-scale industries thrive, they will contribute considerably to addressing macro-economic challenges such as poverty, inequality, and environmental issues.

Nigeria has over the years tested several agricultural and poverty alleviation programmes namely: Operation Feed the Nation, Green Revolution, Directorate of Food and Rural Infrastructure, River Basin Development Authorities, Tractor Hiring Units, a better life for

Rural Dweller, Women Enhancement Programmes, Millennium Development Goals, Fadama, Agriculture Transformation Agenda, SURE-P (Subsidy Reinvestment Programmes), National Directorate of Employment, Agricultural and Rural Development Bank, NAIC (National Agricultural Insurance Corporation; Strategic Grain Reserves, Annual-Drawn Tractor Service and Micro Finance Banks, to name but a few. The essence of Microfinance Banks as copied from India test cases was to make finances available to rural dwellers and farmers at affordable rates because the inadequate supply of credit has been an important constraint on production in many developing countries including Nigeria where the majority of the population lack access to financial services from formal institutions, either for credit or for savings. Therefore, making credit available, particularly to the rural poor is thus considered essential to alleviate poverty and promote economic development (Taiwo and Agwu, 2016). All efforts in providing credits seem to be in vain in raising rural farm productivity and reducing poverty. This perhaps informs the need for commitment to micro-financing across the country.

1.2 Statement of the Research Problem

The problem of poverty is not peculiar to Nigeria alone, it is a worldwide problem hence the alleviation of poverty as one of the Millennium Development Goals. The Microfinance banking concept is to provide financial services to the poor. It is on record that about half of the world's population (about eight billion people) lives on an income less than \$2.15 a day (World Bank, 2018), which the World Bank has defined extreme poverty as people living on less than \$2.15 a day. But extreme is not only about low income, it is also about what people can or cannot afford.

further state that the Nigerian economy has been suffering from severe depression since the mid-1980s. Its Gross Domestic Product (GDP) which was US\$93.3 billion in 1980 is currently less than a quarter of what it was twenty-five years ago". Nigeria is ranked among the poorest countries in the world (Raheem *et al.*, 2014), and the number of those living in poverty has continued to increase over the years and it was estimated that more than 45% of Nigerians live below the poverty line. An analysis of the depth and severity of poverty in Nigeria showed that the rural areas were the most affected.

According to Egboro (2015), 65% of the Nigeria populace are excluded from access to financial services as they are mostly served by the informal financial sectors such as money lenders, friends, relatives, and Non-Governmental Organizations. This lack of economic empowerment more than any other singular factor is largely responsible for the poverty level in our rural areas. In spite of the establishment of microfinance banks, it was observed that most people are not able to obtain a loan. This is attributed to several challenges such as the high level of interest rate, and lack of collaterals required by the commercial banks before loans can be granted which necessitated the establishment of Microfinance to address these economic imbalances. If the banking industry could not meet the demands of Nigerians, especially the rural poor, this shows that there is a gap that need to be filled and this can be done through the contribution of the government by establishing more microfinance banks in Nigeria to help in the alleviation of poverty (Mecha, 2017).

A research designed to evaluate the accomplishment of the microfinance schemes with so much assurance has become necessary to evaluate the impact of credit on beneficiaries and the economic life of the state. Several farmers adduced the gain of microfinancing especially in poverty reduction while some commentators such as Mecha (2017) and

Andrews (2015) have commented on the critical role of micro-credits in achieving the Millennium Development Goals (MDGs). These gains and assurances need to be assessed in our local environment to know if the aim of micro-financing is being achieved particularly as it relates to small-scale fish farmers.

It is against these background that this study addresses the following research questions:

- i. What are the socioeconomic characteristics of the fish farmers in the study area?
- ii. What is the differential in income between the beneficiary and non-beneficiary of microfinance credit among fish farmers in the study area?
- iii. What is the effect of participation in microfinance scheme on income of fish farmers in the study area?
- iv. What is the poverty level of fish farmers in the study area?
- v. What is the effect of microfinance credit scheme on poverty alleviation of fish farmers in the study area?
- vi. What are the factors hindering smallholder fish farmers' access to microfinance credits in the study area?

1.3 Aim and Objectives of the Study

The aim of the study is to examine the effect of Microfinance credit scheme on poverty and income inequality of small scale fish farmers in Niger State Nigeria.

The specific objectives were to:

- i. describe the socio-economic characteristic of the fish farmers in the study area,

- ii. examine the likely differentials in the distribution of income of beneficiaries and non-beneficiaries of microfinance credit among fish farmers in the study area,
- iii. examine the effect of participation in microfinance scheme on the income of the fish farmers in the study area,
- iv. determine the poverty level of fish farmers in the study area,
- v. examine the effect of microfinance credit scheme on poverty alleviation of fish farmers in the study area?
- vi. ascertain the factors hindering small holder fish farmers' access to microfinance credits in the study area

1.4 Hypothesis of the Study

H₀: There is no significance difference between the income level of both beneficiary and non-beneficiary of microfinance credit among fish farmers in the study area.

1.5 Justification for the Study

Microfinance scheme seem to be veritable source of funding for small scale farmers to earn extra income and to grow their own food (Mecha, 2017) which the Nigerian government at different times has been launching different poverty alleviation programmes at different times by different regimes of government yet the outcome is always a deviation from expectations (Girei *et al.*, 2013). The findings of this study will be useful to government and policy makers in that it will help them to know the importance of microfinance scheme thereby knowing ways of improving the quality of their services. The result of the study will also bring out the areas that need improvement and make suggestions for improving on them.

The findings of this study will also be useful to those planning to open Microfinance banks to know the usefulness of microfinance banks as catalyst or stimulus for poverty alleviation in rural settings as way of developing rural banking and will also assist farmers on how to judiciously utilise microcredit services offered to them. Those who need referencing materials on effect of micro financing in alleviating poverty will also find this study useful. The findings of this study will also help Niger State and Nigeria in general to deal with the challenges of poverty alleviation in the areas of policy choices and programme implementation. Equally, future researchers on the subject matter will find a reservoir of literature from this study for further improvement and development of the subject matter.

CHAPTER TWO

2.0

LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1 The grameen theory

Grameen Bank loans are not secured by physical collateral like the other commercial banks, instead, they are secured by group collateral complemented with peer monitoring and pressure to enforce repayment. Loans are disbursed through banking units of separate groups of five members for men and women that apply for loan. Individual members of each group receive loans but the entire group is held liable for repayment. In first round, loan is granted to two members to invest in their business. If these members repay their loans successfully, then four to six weeks later, next two members also will be granted for loan. The last one member will be eligible for loan if the previous two members are able to repay their loans. Repayment of each member give room for next loan and continues like that if all members are able to repay their loans (Schurmann and Johnston, 2009). Invariably, if a member defaults, no other member of the group is legible to receive further loan. Six to eight groups are organized into a community referred to as the “centre” and this constitutes the second tier level of participation by which a Bank official deals with these all eight groups. However, this model operates using the modality of collective guarantees, close supervision and peer pressure from other members of the group. Therefore, the model had been quite successful as a bank for the poor and as a social movement based on principles of awareness and training, which has facilitated active participation of poor (Schurmann and Johnston, 2009).

2.1.2 The linkage theory

The framework for linking informal savings collectors to the formal institutions formed the basis of the breakthrough discussed earlier. In view of the banks' readiness to acquire more information about the informal sector and making serious efforts at strengthening group schemes encouraged the successful turnaround of microcredit programs. An example is the merger of the Nigerian Agricultural and Cooperative Bank (NACB), Peoples Bank of Nigeria and Family Economic Advancement Program (FEAP) to form Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB). Also the current Bankers Committee initiative which is supported by the CBN, for banks to set aside 10% of their profit before tax for equity investment in small scale industries will be tangential to alleviating poverty through the lending window or through joint ventures (Oba *et al.*, 2019).

2.1.3 The esusu theory

Esusu is a revolving loan scheme in Nigeria and entrenched in most West African countries operating as an informal micro-credit programme. The group formed to operate the revolving schemes is voluntarily. In this model of microfinance, members make fixed contributions of money at regular intervals. This is quite different from Grameen model because at each interval, one member collects the entire contributions from all. Every member takes a turn until the cycle is completed, and then it starts again. One perfect function of Esusu is that it serves as a saving mechanism for the last person to take his or her turn. The Esusu are very strong program that have assisted in promoting entrepreneurship in most of West African countries, particularly among market women in

rural/urban markets. Each Esusu group has a recognized leader and Esusu are often used as model by NGOs trying to establish micro-finance programme in urban setting (Akanji, 2008).

2.1.4 Non Government Organization (NGO) Theory

This is also grouped as informal model as it tends to adapt the Grammen principles and usually are gender specific and sector ally motivated. There are women groups, farmers union, trader union etc in this organization. The NGOs with the features of Grameen bank are formed in different countries in the world with different names, e.g. Left Above Poverty (LAPO) can be view as a typical example of NGO that emulate the method of Grameen Bank by channeling credit facilities to the poor who are members in Nigeria. While in Ghana and Gambia, the most successful micro credit programs with these features are women finance associations. The programs were reported to have had high rate of repayment (Oba *et al.*, 2019).

2.1.5 The Progressive Lending-Bancosol Theory

This model was adopted by Bancosol in Bolivia when populist government came to power and there were high rate of unemployment in urban areas. Bancosol is a pioneering microfinance institution in the region was developed to address the problem of urban unemployment and provide credit to the cash-strapped informal sector. In this model, the amount of loan increases after completion of every repayment schedule. The progressive lending is an extension of Grameen model because it incorporates other characteristics of the Grameen model such as targeting the poor women, group formation and public payment. In the progressive lending, micro lenders are flexible about collateral and lend

loan to group with individuals. Many MFIs are now adopting this approach because it is very helpful in areas with low population densities or highly diverse population where group forming is not easy due to different ratio of safe and risky borrowers (Oba *et al.*, 2019).

2.1.6 Theoretical Link Between Microfinance and Poverty Reduction

Poverty, measured by the proportion of population living below the poverty line which highlights that 40 percent of the total population, or almost 83 million people, live below the poverty line of 137,430 naira (\$381.75) per year in Nigeria (World Bank 2020). Even before the COVID-19 crisis, around 4 in 10 Nigerians were living in poverty and millions more were vulnerable to falling below the poverty line, as growth was slow. Based on the survey data from the Nigerian National Bureau of Statistics, 39.1 percent of Nigerians lived below the international poverty line of \$1.90 per person per day in 2019 (World Bank 2019). Yet a further 31.9 percent of Nigerians had consumption levels between \$1.90 and \$3.20 per person per day, making them vulnerable to falling into extreme poverty when shocks occur. Poverty in Nigeria disproportionately affected rural dwellers and households living in northern Nigeria. Among those living below the \$1.90 poverty line in 2019, 84.6 percent lived in rural areas and 76.3 percent lived in the North Central, North East, or North West zones (World Bank 2019).

Poverty in Nigeria is acknowledged to be largely a rural phenomenon where agriculture is the predominant occupation. Usually, the major source of income (of the poor) is agriculture and poverty is more prevalent among small-scale farmers. According to the report which brings together the latest evidence on the profile and drivers of poverty in

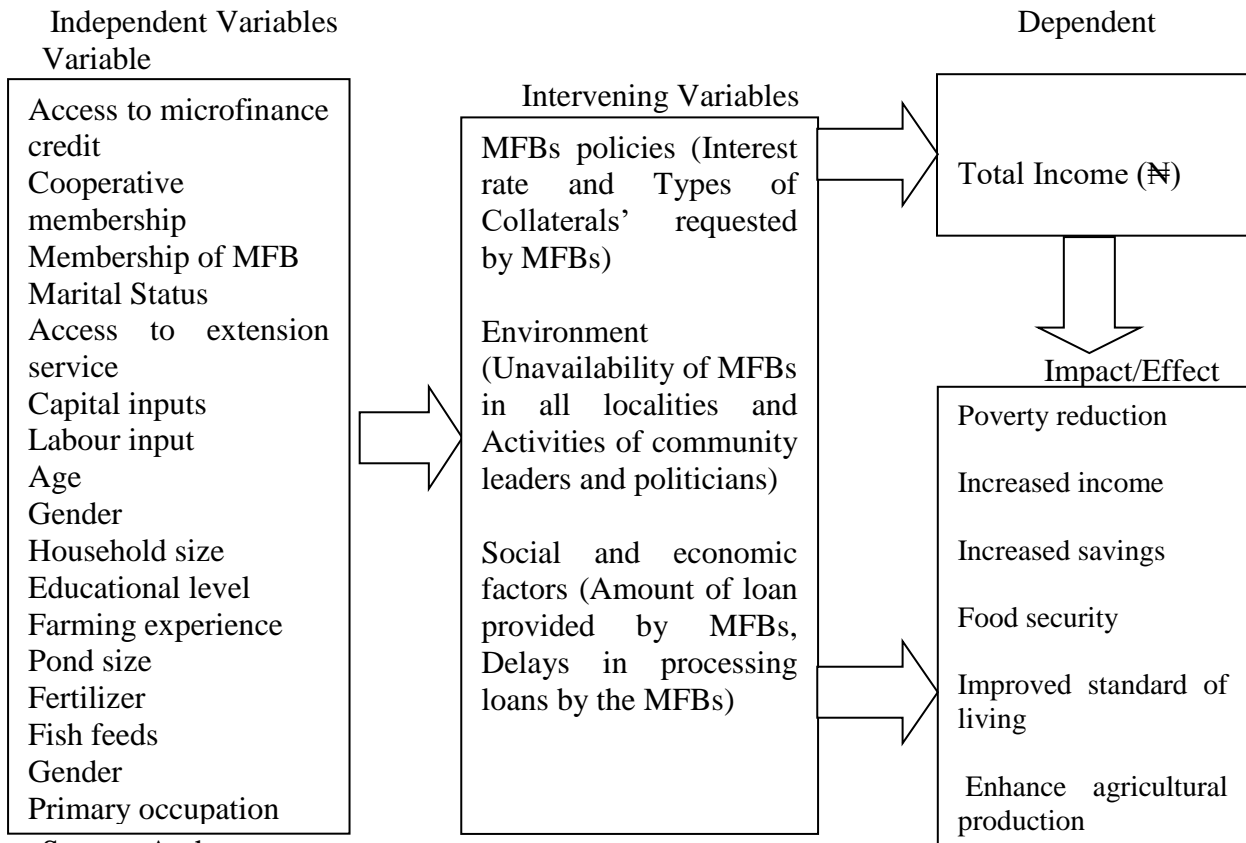
Nigeria shows that as many as 4 in 10 Nigerians who lives below the national poverty line lack education and access to basic infrastructure, such as electricity, safe drinking water, and improved sanitation (World Bank, 2022). Rural areas and urban fringes have a slightly higher concentration of poor people. For instance, World Bank (2019) noted that more than 84.6 percent of the poor in Nigeria are ruralities. To reduce the rural- urban income gap (inequality), the poverty eradication plans should emphasize among other things the strategic improvement of access to credit by the poor through the Microfinance sector. Credit is considered to be an essential input to increase agricultural productivity, mainly land and labour (Abraham, 2018). It is believed that credit boost income levels, increase employment at the household level and thereby alleviates poverty. Inadequate access to credits by the poor has been identified as one of the contributing factors to poverty. Credit enables poor to overcome their liquidity constraints and undertake some investments especially in improved farm technology and inputs, thereby leading to increased agricultural production. It helps them to smooth out their consumption pattern during the lean periods of the years and also helps maintain the productivity capacity of poor rural households.

According to CBN (2011), the professed goal of microcredit is to improve the welfare of the poor as a result of better access to small loans. Ayinde (2013) argued that lack of adequate access to credits for poor may have negative consequence for various household level outcomes including technology adoption, agricultural productivity, food security, nutrition, health and overall welfare. Access to microfinance credits therefore affects welfare outcomes by alleviating the capital constraint on agricultural households, hence enabling poor household with little or no savings to acquire agricultural inputs. Abraham,

(2018) upheld that access to credit in addition, increases the poor household risk-bearing ability, improves their risk-coping strategies and enable consumption smoothing over time. By doing so, microfinance is argued to improve the welfare of the poor and is helping the fight of poverty.

2.2 Conceptual Framework

The conceptual framework as presented in figure 1.0 links the independent variables with the dependent variable which is the total income. Given the intervening variables of MFBs policies (interest rate and types of collaterals' requested by MFBs), environment (Unavailability of MFBs in all localities and activities of community leaders and politicians), socio and economic factors (Amount of loan provided by MFBs, delays in processing loans by the MFBs),with a positive outcomes when microfinance loan is efficiently used, there is likely to be increased in total income of the farmer which eventually reduce poverty status due to improve in their standard of living, increase their savings, enhance agricultural production, increased food security. The increased in total income and improvement in farmer's standard of living will encourage them to keep collecting microfinance loan in other to boost their production.



Source: Author

Figure 1: Authors Conceptual Framework

2.2.1 Concept of Microfinance

The concept of microfinance is not new, savings and credit groups that have operated for centuries include “susus” of Ghana, “chit funds” in India, “tandas” in Mexico, “arisan” in Indonesia, “ajo” in Nigeria, “cheetu” in Sri Lanka, “tontines” in West Africa, and “pasanaku” in Bolivia, as well as numerous savings clubs found all over the world (Yahaya *et al.*, 2011). However, Raphael *et al.* (2013) opined that “Susu” which is one of the microfinance scheme in Ghana is thought to have originated from Nigeria and spread to Ghana in early twentieth century. According to Tehulu (2013), Africa and other developing countries regarded microfinance institutions as the main source of funding enterprise. Formal credit and savings institutions for the poor have also been around for decades,

providing customers who were traditionally neglected by commercial banks a way of obtaining financial services through cooperative and development finance institutions (Consultative Group to Assist the Poor, (CGAP). Microfinance is about providing financial services to the poor who are not served by the conventional formal financial institutions (e.g. commercial banks). It is about extending the frontier of financial services provision.

Microfinance refers to provision of financial services: loans, savings, insurance, or transfer services to low-income households. Mecha (2017) further describes microfinance as small loans, savings mobilization and training offered to the poor to enable them to create self-employment by starting their own businesses and thus generating income. Micro-finance supports people especially women to move out of poverty as it rewards productive capital to the poor who have been omitted from the formal banking sector. Mecha, (2017) confirms that micro-finance is a powerful tool of self-empowerment to the poor at the world level particularly women in developing countries. As far as gender equality is concerned, Mecha (2017) defined micro-finance as an effective tool that promotes women and youth empowerment.

According to Osamwonyi and Obayagbona (2012), microfinance literally means building financial systems that effectively and efficiently serve the needs of the poor. Microfinance is the provision of a broad range of financial services such as savings, loans, payment services, money transfers and insurance to the poor and low income persons, households and their micro enterprises. Roadman (2012) opines that microfinance bank is the provision of financial services to low income earners, including consumers and the self employed who traditionally lack access to formal money deposit banking and related services. In

other words, it is the provision of small loans (microcredit) to poor people to enable them engage in productive activities or grow their businesses.

2.2.2 History and Development of Microfinance in Nigeria

Microfinance started in Bangladesh and parts of Latin America in the mid-1970s to provide credit to the poor, who were generally excluded from formal financial services. The model gained popularity and has since been replicated in low and high-income countries. Over time, financial service providers have developed a better understanding of the wide range of financial needs of low-income people in both urban and rural areas. These needs might include asset building, managing irregular income flows and coping with crises, such as sicknesses, deaths, natural disasters and conflicts. Many financial service providers now offer a wide range of products beyond credit, such as savings, insurance, and money transfers, to help poor people manage their financial lives. It was necessary that all programs pass two key tests:

- i. Show that people can be relied on to repay their loans and
- ii. Show that it is possible to provide financial services to poor people, which are done through market-based enterprises without subsidy. In the 1970's a new wave of microfinance initiative introduced many new innovations into the sector. Many pioneering enterprises began experimenting with loaning to the poor and underserved in the same year. Beginning in the 1980s a new approach came to work on the assumption that more market-based solutions were required still focusing on income expansion and poverty reduction but searching for cost-effective alternatives (Ledgerwood 2013). Local Non-governmental organizations also began to look for a more long-term approach, and at about the same time

Prof. Mohammed Yunus of Bangladesh who won the 2006 Nobel peace prize led the first lending scheme for landless people. From 1980 onwards, the field of microfinance has grown substantially and some NGOs have started transforming into formal financial institutions that recognize the need of savings services to clients and also to access market funding sources than rely on donor funds

According to Joseph *et al.* (2016), Yunus founded the Grameen Bank in 1983, now widely popular and seen as a model being replicated by many including leaders, NGOs, and advocacy groups in dozens of countries. By challenging traditional banking system about the credit worthiness of borrowers and often giving uncollateralised loans, Microfinance has unlocked the entrepreneurial ambitions of some of the world's poorest people. Societies in the world have different ways of addressing the financial needs of the poor. In Nigeria, the thrift or *Esusu* system is well known. It provides instruments for small savings, revolving loans and credit facilities. However, the pioneering work of Prof. Yunus has opened a new dimension to micro credit financing. He introduced the practice that has come to be known as microfinance in which small scale loans are made available mainly to women with little or no access to traditional sources of financial capital. In addition, it is responsible for creating and sustaining new income-generating activities in poor areas traditionally dependent on subsistence farming. Over the last three decades, the popularity of microfinance has steadily increased. Many in the West saw microfinance as a pivotal innovation in the fight against poverty in the developing world (Joseph *et al.*, 2016).

The licensing of Microfinance Banks in Nigeria is the responsibility of the Central Bank of Nigeria. The practice of microfinance in Nigeria is culturally rooted and dates back several centuries. The traditional microfinance institutions provide access to credit for the rural and

urban, low-income earners. They are mainly of the informal Self-Help Groups (SHGs) or Rotating Savings and Credit Associations (ROSCAs) types. Other providers of microfinance services include savings collectors and co-operative societies. The informal financial institutions generally have limited outreach due primarily to paucity of loanable funds. In order to enhance the flow of financial services to Nigerian rural areas, Government has, in the past, initiated a series of publicly-financed micro/rural credit programmes and policies targeted at the poor. Notable among such programmes were the Rural Banking Programme, sectoral allocation of credits, a concessionary interest rate, and the Agricultural Credit Guarantee Scheme (ACGS). Other institutional arrangements were the establishment of the Nigerian Agricultural and Co-operative Bank Limited (NACB), the National Directorate of Employment (NDE), the Nigerian Agricultural Insurance Corporation (NAIC), the Peoples Bank of Nigeria (PBN), the Community Banks (CBs), and the Family Economic Advancement Programme (FEAP). In 2000, Government merged the NACB with the PBN and FEAP to form the Nigerian Agricultural Cooperative and Rural Development Bank Limited (NACRDB) to enhance the provision of finance to the agricultural sector. It also created the National Poverty Eradication Programme (NAPEP) with the mandate of providing financial services to alleviate poverty. Despite these measures, it became increasingly evident that such governmental policies failed to grant financial access to those most in need (i.e. the rural poor) and that the programs were largely unsustainable (Joseph *et al.*,2016).

2.2.3 Ownership of Microfinance Banks

- i. Microfinance Banks (MFB) can be established by individuals, groups of individuals, community development associations, private corporate entities, NGO-MFIs, or foreign investors.
- ii. No individual, group of individuals, their proxies or corporate entities, and/or their subsidiaries, shall own controlling interest in more than one MFB, except as approved by the Central Bank of Nigeria.

2.2.4 Microfinance Bank Categorization

Microfinance Banks shall be required to be adequately capitalized, technically sound, and oriented towards lending based on cash flow and the character of clients. There shall be three categories of Microfinance Banks (MFBs).

2.2.4.1 Category 1

Unit Microfinance Bank: A Unit Microfinance Bank is authorized to operate in one location. It shall be required to have a minimum paid up capital of N20 million (twenty million Naira) and is prohibited from having branches and cash centres. Examples are; ABOVE ONLY MFB in Edo State, ABIGI MFB in Ogun State, ACHINA MFB in Anambra State, ADA MFB in Nasarawa State and AJINGI MFB in Kano State.

2.2.4.2 Category 2

State Microfinance Bank: A State Microfinance Bank is authorized to operate in one State or the Federal Capital Territory (FCT). It shall be required to have a minimum paid up capital of N100 million (one hundred million Naira) and is allowed to open branches within

the same State or the FCT, subject to prior written approval by the CBN for each new branch. Examples are; ADDOSSAR MFB in Lagos State, ACTIVE POINT MFB in Akwa ibom State, ABUCOOP MFB in Abuja, ASPIRE MFB in Delta State and BARNAWA MFB in Kaduna State.

2.2.4.3 Category 3

National Microfinance Bank: A National Microfinance Bank is authorized to operate in more than one state including the FCT. It shall be required to have a minimum paid up capital of N2 billion (two billion Naira), and is allowed to open branches in all states of the federation and the FCT, subject to prior written approval by the CBN. Examples are LAPO MFB in Edo State, LETSHEGO MFB in Lagos State, NPF MFB in Lagos State, BAOBAB MFB in Kaduna State and ASHA MFB in Lagos State.

2.2.4.4 Transformation Path

- i. A Unit MFB that intends to transform to a state MFB shall be required to surrender its licence and obtain a state MFB licence, subject to fulfilling stipulated requirements.
- ii. A state MFB that intends to transform to a National MFB must have at least 5 branches which are spread across the Local Government Areas in the state. This is to ensure that the MFB has gained experience necessary to manage a National MFB. It shall also be required to surrender its license and fulfill other stipulated requirements.

The prescribed minimum capital requirement for each category of MFB may be reviewed from time to time by the Central Bank of Nigeria.

2.2.5 Impact of Microfinance on Agricultural Production

Based on the findings of researchers below, it has shown that microfinance has a great influence on agriculture production. Aminu and Samuel (2015), investigated the productivity growth of farmers with access to microfinance using clients of the Grameen Bank in Ghana. His study was focused on agricultural productivity and hence, his research was confined within comparing the agricultural productivity only. The key finding from the study of Aminu and Samuel (2015), was that the small and marginal farmers as a result of participating in the Grameen Bank's programs could allocate a higher percentage of their land for the cultivation of high-yielding varieties (HYV) and consequently, improved productivity. His studies revealed that the users of microfinance can bring 81.5 percent of their cultivable land under HYV production compared to 76 percent of the non-users.

The study further stated that yield of the users of microfinance for HYV Boro was 47.6 maenads per hectare while it was 38.2 for the non-users. The reason for the above was that for a farmer to cultivate HYV crops, he/she required costly inputs like irrigated water, relatively large doses of fertilizers and pesticides which many could not afford before joining the Grameen Bank basically due to their low income level. However, joining the Grameen Bank credit programs has increased their income and they also enjoyed economies of scale through working in groups, which made it relatively easier for them to obtain HYV inputs at a low average cost. He further stated that members of all programs in general, have achieved a higher agricultural productivity in terms of per acre yield due to the financial support received and the group benefits enjoyed.

On the other hand, the influence of microfinance on agriculture production is not always positive. They argue that providers of micro credit have not generally addressed the credit need of small and marginal farmers because of their priority of funding to the poor and because of some perceived problems which include risk of investing in agriculture, seasonality of agricultural production, poor loan repayment performance of agricultural lending, and the technical nature of agriculture production system. These factors make it highly risky for lenders to provide loans to small holder farmers thereby limiting production and consequently pushing some farmers out of the field as they seek livelihood opportunities in other sectors. In the long run, overall production in the agriculture sector will fall all other things being equal (Aminu and Samuel, 2015).

2.2.6 Goals of Microfinance

According to Ubani (2012), establishment of microfinance banks has become imperative to serve the following purposes:

- i. Mobilize savings for financial intermediation.
- ii. Provide diversified, affordable and dependable financial services to the active poor, in a timely and competitive manner that would enable them to undertake and develop long-term, sustainable entrepreneurial activities.
- iii. Provide veritable avenues for the administration of the micro credit programmes of government and high networth individuals on a non-recourse case basis. In particular, this policy ensures that state governments shall dedicate an amount of not less than 1% of their annual budgets for the on lending activities of microfinance banks in favour of their residents.

- iv. Create employment opportunities and increase the productivity of the active poor in the country, thereby increasing their individual household income and uplifting their standard of living.
- v. Render payment services, such as salaries, gratuities, and pensions for various tiers of government.
- vi. Enhance organized, systematic and focused participation of the poor in the socio-economic development and resource allocation process.

2.2.7 Microfinance Policy in Nigeria

Microfinance policy seeks to make financial services available to the economically poor, low income earners and small and medium scale enterprises.

2.2.7.1 Microfinance Policy Objectives

According to Ubani (2012), The Microfinance policy provides a platform to achieve the following specific objectives:

- i. Promotion of a platform for microfinance service providers to network and exchange views and share experiences.
- ii. Promotion of linkage programmes between microfinance institutions (MFIs), Deposit Money Banks (DMBs), Development Finance Institutions (DFIs) and specialized funding institutions.
- iii. Creation of employment opportunities and increase the productivity and household income of the active poor in the country, thereby enhancing their standard of living.
- iv. Enhancement of service delivery to micro, small and medium enterprises (MSMEs).

- v. Provision of dependable avenues for the administration of the microcredit programmes of government and high networth individuals on a non-recourse basis.
- vi. Provision of timely, diversified, affordable and dependable financial services to the economically active poor.
- vii. Mobilisation of savings for intermediation and rural transformation.
- viii. Promotion of synergy and mainstreaming of the informal Microfinance sub-sector into the formal financial system.

2.2.7.2 Microfinance Policy Targets

Based on the objectives listed above, the targets of the microfinance policy are as to:

- i. Eliminate gender disparity by ensuring that women's access to financial services increase by 15 per cent annually that is 5 percent above the stipulated minimum of 10 per cent across the board.
- ii. Increase the share of microcredit as percentage of total credit to the economy from 0.9 per cent in 2005 to at least 20 per cent in 2020; and the share of microcredit as percentage of GDP from 0.2 per cent in 2005 to at least 5 per cent in 2020.
- iii. Increase access to financial services of the economically active poor by 10 per cent annually.
- iv. Ensure the participation of all States and the FCT as well as at least two-thirds of all the Local Government Areas (LGAs) in microfinance activities (Ubani, 2012).

2.2.7.3 Microfinance Policy Strategies

A number of strategies were derived from the stated objectives and targets. They include:

- i. The linkages among Deposit Money Banks (DMBs), Development Finance Institutions (DFIs), Non Government Organization (NGO) - Microfinance Institutions (MFIs) and Microfinance Banks (MFBs} as well as other micro-enterprise finance institutions would be institutionalized and strengthened to increase the flow of funds to clients.
- ii. The roles of stakeholders“ in the development of the microfinance sub-sector are clearly defined in Section 8 of the Policy and efforts towards proper harmonization of these roles would be ensured.
- iii. The Bank shall license, regulate and supervise the activities of promoters and microfinance service providers that wish to become MFBs. In the light of experiences from the system thus far, the Bank shall ensure that all such licensed MFBs are adequately capitalised and operated in a safe and sound manner.
- iv. There shall be collaboration and close monitoring of donors“ assistance in the area of microfinance, in line with the provisions of this policy.
- v. Attention will be paid to the promotion of savings and banking culture among low-income households, through Financial Literacy and Consumer Protection Programmes.
- vi. Non-deposit taking microfinance institutions shall continue their support to micro-enterprises and will be encouraged to render regular returns on their operations to the Bank primarily for statistical purposes. Those that attain the minimum regulatory capital requirements and clientele shall be encouraged and incentivised to transform to licensed MFBs.
- vii. Professionalism, transparency and good governance shall be the bedrock of the microfinance sub-sector. Therefore, efforts shall be made to strengthen the skills of

regulators, operators and directors of microfinance institutions. The establishment of institutions that support the development and growth of microfinance service providers and clients would be encouraged.

- viii. The participation of Federal, State and Local Governments in the system shall be promoted. This is by encouraging the three-tier of government to devote at least one (1) per cent of their annual budgets to microcredit initiatives, through a combination of moral suasion, advocacy and enlightenment, to be administered largely through MFBs.
- ix. MFBs will be required to include disaggregated data in their periodic returns on the level of patronage of their products and services (Ubani, 2012).

2.2.8 The concept of poverty

Some people take poverty to involve a subjective and a comparative terms while others take it to be moral and evaluative. Defining poverty involves the question of whether it is mainly about material needs involving measuring consumption or by using income as the main determinant factor, or a much broader set of needs that includes factors of wellbeing (Irobi, 2008). We use the term ‘poorest of very poor’ to refer to people living on less than \$1 per day. We also use the term ‘poor’ to mean those living in poverty above \$2 per day or in the upper half of those living below their nation’s poverty line.

The first Millennium Development Goals (MDG) is to eradicate extreme poverty and hunger. This has become an issue of concern both at the local and international levels since the MDGs were established. The World Bank defined poverty as the state of living on less than \$2 a day and this poverty continues to remain elusive to eradicate even for the billion

in question (World Bank 2018). World Bank also have yet another definition as having a multi-dimensional nature consisting of vulnerability, powerlessness and social exclusion in addition to material deprivation. Poverty in many developing countries is largely a matter of not having enough on food to eat. Providing the poor with financial services is one way to increase their income and productivity, e.g. through self-employment and thus make them to escape poverty (Irobi, 2008). Poverty is explained by individual circumstances and/or characteristics of the poor people, such as amount of education, skills, experience, intelligence, health, handicaps age, sex etc.

Poverty can be defined as the state of being without, often associated with need, hardship and lack of resources across a wide range of circumstances. Poverty is further classified into three variables, Income poverty, Vulnerability and inability to be empowered. Income poverty stands for lack of income to afford minimum basic necessities of life. Vulnerability involves the probability of risk today of being in poverty or to fall into deeper poverty in the future. Regarding empowerment, the focus of this study is on women. In addition, most MFIs are working towards women empowerment as a primary objective (World Bank 2018).

According to Fasoranti (2015) poverty consists of two interacting deprivations- physiological and social. Physiological deprivation describes the inability of individuals to meet or achieve basic material and physiological needs. This can be measured either as lack of income, which limits access to food and to education, health, housing, water and sanitation services. or It could also be the failure to achieve desired outcomes, such as a high quality diet rich in micronutrients, health status, educational attainment and the quality of health, water and sanitation services received. Social deprivation on the other hand refers

to an absence of elements that are empowering, such as autonomy, time, information, dignity and self-esteem.

2.2.9 Causes of Poverty

Poverty is a macro problem. Some of the key reasons why some people all over the world are poor and remain poor are political instability, natural disasters, corruption, socio-economic disparities and prejudice, lack of access to education, lack of infrastructure etc. Some other causes of poverty can be from acute conditions like warfare. The material and human destruction that is often caused by warfare is a major development problem (Ettah *et al.*,2020).

An agricultural cycle is yet another cause of poverty. People that rely on fruits and vegetables that they produce for household food consumption often are faced with cycles of relative abundance of scarcity. The period before harvest is always a hungry period for families that rely on subsistence production for survival. During the scarcity periods, these families lack sufficient resources to meet their minimal nutritional needs. Droughts and flooding can cause poverty as well. Apart from destruction caused by natural events such as hurricanes, environmental forces always cause acute periods of crisis by destroying many crops and animals as well (FAO, 2015).

There is income fluctuations in many families and many may have to go to bed without food for family members, this can basically be influenced by many factors including the chance of one getting the job each day, price fluctuation of the products, such as being paid on commissions etc.

Not having access to resources to create products or earnings e.g. not having bamboo for a person who weaves.

2.2.10 Measurement of Poverty

The purpose of poverty measurement is to find out who is poor, how many people are poor, and where the poor are located. One way to measure poverty is through the income approach. This approach to poverty measurement assumes that individuals and households are poor if their income or consumption falls below certain threshold, usually define as a minimum acceptable level of well-being by a group of population (Development Initiatives, 2016). The emphasis is placed on material well-being and income, a “means” indicator, is employed as an alternative for poverty.

According to Foster Greer and Thorbecke (1984) which is most frequent used measurement are, the head count poverty index given by the percentage of population that live in the household with a consumption per capital less than the poverty line, the poverty gap index which reflects the depth of poverty by taking into account how far the average poor person’s income is from the poverty line and the distribution sensitive measures of squared poverty gap which is define as the mean of the squared proportionate poverty gap which reflect the severity.

When poverty is defined in a broader sense it can raise the questions of how to measure overall poverty and how to compare achievements in the different dimensions. Below is how the different dimensions of poverty can be measured.

- i. Measuring vulnerability: Poverty cannot be fully alleviated in a sustainable way unless intermediaries are designed to tackle the multi-dimensional nature of

poverty. Vulnerability being a dynamic concept has its measurement centered on the variability to income or consumption and on the availability of other dimensions of well being like physical assets, human capital, social capital and prevalence of non-income risks like violence, natural disasters and son on (Development Initiatives, 2016).

- ii. The head count poverty index given by the percentage of the population that lives in the household with annual income per capita less than the poverty line.
- iii. Measuring material deprivation: Under this you have the income and consumption levels of the household. You measure this using the national poverty line, a critical cut off in income or consumption below which an individual or a household is determined to be poor. The impact of MF in this regard, can be judged from its contribution in helping households to move from a permanent 'below poverty line' situation to a permanent 'above poverty line' situation (Development Initiatives, 2016). The depth of this programme fashioned in reaching the poor located far from the poverty line can be seen as a viable indicator as well.
- iv. Money metrics which is the National consumer survey monitoring poverty through the household expenditure known as money metric analysis, the national consumer survey are used to compute the relative poverty and absolute poverty.
- v. The poverty gap index which reflects the depth of poverty by taking into account, how far the average poor person's annual income is from the poverty line.
- vi. Dollar per day poverty line. This measure considers all individuals whose expenditure or income per day is less than a dollar using the current exchange of a nation as poor.

- vii. The distributional sensitive measure of squared poverty gap which reflects the severity of poverty.
- viii. Another measurement of poverty tool is known as participative monitoring or voice of the poor. This also known as the subjective poverty measure. It is based on perception of the citizenry. It is neither related to per capita expenditure or household nor the country adult-equivalent scale (Development Initiatives, 2016).

2.2.11 World Bank Poverty Reduction Strategy

The World Bank and International Monetary Fund (IMF) were established to help in the development of countries. They were created to aid in development after the 1st world war. The task of the World Bank is to help in developing the developing countries by financing their development goals. They have implemented some programmes towards the eradication of poverty in some of the developing countries. Such programmes are known as Poverty Reduction Strategy Programme (PRSP). Some of the programmes have assisted some of the developing countries in their finances and investments. Irrespective of the fight to eradicate poverty, it continues to remain elusive to eradicate for billion (World Bank, 2011). They laid out a process that very poor countries would follow if they wish to make use of various concessionary lending facilities. After some years, an evaluation was made and it was noted that some of the PRSP process promotes is helpful. It was better than one that ignores the poor, never solicits outside opinion, imposes solutions with no reference with the participation of the recipient country, and is derived with no consultation with the recipient country (World Bank, 2011).

Poverty for some involves a subjective and a comparative term; while for others it is moral and evaluative and some still see it as scientifically based. The poverty reduction strategy that the World Bank and the IMF has required from the HIPC countries since 1999 is normally described not by its contents but by the process by which the PRSP is elaborated.

The concept of Poverty Reduction Strategy Papers (PRSP) involves the following processes. Below are the five principles that PRSP involves:

- i. **Comprehensive:** Based on the concept of poverty as multi-dimensional this principle opines that poverty cannot be reduced, by increasing economic growth alone but with other factors in collaboration.
- ii. **Country driven:** Here the original initiative to start a PRSP should originate with the countries themselves. There is always the need of the countries initiating it to participate with the civil society organizations in order to agree on the type of strategy to use or implement.
- iii. **Partnership-oriented:** This includes the various partners of development, from bilateral donors and multilateral institutions, through national governments and parliaments, to domestic and international civil society organizations.
- iv. **Result-oriented:** The PRSP should try to focus on the effects of the policies rather than on the policies itself. They should try to look at the effects of the policies at the long run on the society where it is being administered to, to find out how it is going to positively affect them or otherwise before implementation.
- v. **Long –term:** Poverty, which is a multi-dimension issue, is not easy to be reduced within a short run. This makes it difficult for the PRSP programmes to be run over a short term but rather must be consistent over a period of time (World Bank, 2011).

The background to the PRSP is that Structural Adjustment Programme (SAP) of the World Bank and IMF failed. It could be recalled that this programme of SAP began in the 1980's. They did not fulfill the aim of their initiation. The creditors ran SAP, and the IMF with the World Bank not directly by the countries affected by them. The SAP only cared about economic growth but not bothered much on how poverty should be dealt with or removed entirely.

The PRSP Programme's objective was to lessen the negative impacts of the Structural Adjustment Programmes, and not to change the main orientation of the policies. A way to analyse the contents of PRSPs is to rightly compare it with the civil society's demand, e.g. the primary education free for all issue. Then, if you compare what the civil society organizations and the trade unions demand with the PRSPs offer in the macroeconomic policy, land reforms etc, the position differ widely. This difference can be termed to be problematic. PRSP are not result oriented and are not also based on equal partnerships; rather they are in the same direction with a greater agreement among the donors, e.g. in Tanzania and Mozambique. The PRSP are mostly backed with the technical staff in the administration that involve with putting of the elaboration of the policies. A crucial issue is the institutionalization of the PRSP process, which has only taken place in few countries like Tanzania (World Bank, 2011).

However, there are some countries that have tried to dialogue the Poverty Reduction Strategy Programmes and its implementation such as Nigeria.

2.2.12 Poverty Reduction Strategy in Nigeria

Since the causes of poverty are multidimensional, in the same way the strategies for poverty reduction must also be multidimensional. The following suggestions were made:

Taiwo and Agwu (2016) argued that one of the strategies for reducing poverty is to fight corruption and embezzlement of funds, issues that have become a bane of governance and resource use in Nigeria. Elimination of corruption must be seen as an integral part of a poverty alleviation strategy. They also indicated that poverty reduction programmes must be given adequate and sustained funding to create the necessary conducive atmosphere for effective implementation. The funding of such programmes should not be subjected to the whims and caprices of any government in power. The annual allocation to poverty reduction programmes must be specified as a percentage of the national budget and should not be interfered with, no matter who assumes the mantle of leadership of the country.

There is overwhelming evidence that the development of human resources is one of the keys to reducing poverty. Learning from the experience of others, the remarkable growth of the economics of the so-called Tigers of the Pacific Rim was largely due to the heavy investments made by these countries in developing human resources.

All of them are 100 per cent literate as against a literacy level of only 55.6 per cent in Nigeria. Nigeria in spite of her abundant natural resources has simply not made adequate investments in the development of its human resources.

The World Bank Report shows per capita expenditure in Nigeria on health and education is one of the lowest in Africa. Ghana spends twice as much as Nigeria while Togo and Benin spend three times as much as Nigeria on education and health. According to Taiwo and

Agwu (2016) education and health hold the key to eliminating poverty which basic education should therefore become one of the major strategies for poverty reduction in Nigeria. It is obvious that only those who are educated that can hope to find reasonable employment that will lift them above the threshold of poverty. Taiwo and Agwu (2016) further note that meaningful education is the most potent instrument for alleviating and eventually abolishing poverty. It is education that is expected to provide opportunities for the acquisition of knowledge and skills. Empirical evidence in Nigeria shows that there is a steady decrease in percentage of the poor as the level of education particularly that of the head of the household increases. Uneducated people usually end up with poorly paid jobs and as such they always remain poor. In order to reduce poverty, Nigeria has to invest more in the development of her human resources. In agreement with the World Bank suggestions, there should be a clear commitment to providing the poor with access to social services through the development of a good infrastructure. Safe water, electricity, and good roads are areas of infrastructure, which need massive investment particularly, in the rural areas. With more stable supply of electricity, urban artisans can more than double their incomes (Taiwo and Agwu, 2016).

In the rural areas too, the provision of good infrastructure will also assist farmers to increase their income rapidly. The existing poor infrastructure, particularly in the rural areas prevents farmers from producing more food and cash crops; as such an increase may not be easily evacuated to the towns and cities where they are needed. Again, having good infrastructural facilities in place will also encourage the growth of cottage industries in the rural areas where labour is cheaper than in the cities. One of the strategies for reducing poverty is to provide the poor with adequate social infrastructures.

Although not much success has been recorded in agriculture, agricultural development remains the best means of reducing the incidence of poverty in Nigeria. In order to succeed in poverty reduction, development of agriculture must be focused on the rural dwellers. There is the imperative need to invest in agricultural technology so as to boost agricultural productivity. Affordable tools must be fabricated locally while the more expensive tools can be assembled locally with a view to reducing costs. Storage facilities should also be produced to take care of excess farm products. This again will help to stabilize the incomes of those engaged in farming as income fluctuations itself is a source of poverty. If poverty is to be reduced, Nigerian agriculture must shift from the traditional hoe and cutlass agriculture, which keeps people at the subsistence level to, mechanised agriculture.

2.2.13 The Importance of Microfinance on Poverty Reduction

Mecha (2017) explains that until 1980s the presence of in-formal microenterprises, street vendors, home workshops, market stalls, providers of informal transportation services, was generally perceived by policymakers and economists to be as a result of economic dysfunction. Microenterprises were thought of as little more than an indicator that the structure and growth rate of the formal economy were inadequate to absorb the national labor force, and so were perceived as a concealed form of unemployment. Microfinance supported these informal microenterprises through microcredit. The microcredit approach to poverty reduction is “the provision of small loans to individuals, usually within groups, as capital investment to enable income generation through self-employment” (Javid and Abrar, 2015). The following are the major importance of microfinance in poverty reduction.

i. Increase in per Capita Income: As more micro-credit flow to the economy, enterprises starts to flourish and productivity increases which leads to increase in profits thus increase in per capita income, thus micro finance has positive impact on the economy. After taking loan borrower's income and their expenditure on family had also increased extensively. Customer's income had increased which shows that they become able to cross only the extreme poverty line while they remain near poverty line.

ii. Job Creation: Employment opportunities had increased at a moderate rate. The clients started their own business and earn more profit. The Living standard is very important issue in all developing countries. In many developing countries like Bangladesh, Pakistan and India, microfinance is now being used as a tool to increase the living standard of poor societies. There is a positive impact of micro financing on income level and better services of microfinance institutes on increase in satisfaction level of customer (Akram and Hussain, 2011). Microfinance gives the unemployed and the poor some opportunities, hope and self-esteem. Being employed whether self-employed or by an employer gives a person a significant boost to his/her sense of self-respect and dignity. Furthermore, microcredit allows people to signal their creditworthiness. If their success makes banks more willing to lend them larger sums of money and leads to more economic activity, then that should help reduce poverty in the long run. Being successful business ventures, MFIs themselves have also created a large number of good paying jobs. In the words of (Chowdhury, 2009) "We should not lose sight of the fact that commercially successful microfinance institutions are remarkable organizations, employing hundreds and thousands of people at tasks once thought impossible". Good jobs created by successful MFIs should have considerable multiplier effects. Microfinance is making some important positive contributions to

economic development. To be able to serve as a viable poverty reduction strategy, micro-credit financed enterprises must expand and create decent jobs for the growing labour force.

iii. Increase in Consumption: Unproductive use of human resources, financial and other resource are root cause of poverty. Poverty has multi dimensions and persists due to this reason. Major hurdles in improving living standard are lack of finance. So the poor do not take any part in the economic development activities due to the lack of credit for improving their standard of living. Microfinance services such as: savings and micro-loans have direct impact on GDP (Gross Domestic product). An organized support to the microfinance is necessary to start smooth trend for poverty alleviation and economic growth (Awojobi and Bein, 2011). Five basic reason which cause poverty are low profit, high prices of commodities, hard economic times, lack of finance to start or expand their business, and lack of entrepreneur skills.

iv. Increase in Skills: Microfinance Institutions tends to offer some training to its clients, more especially on entrepreneurs' skills, this is basically to impart knowledge to enable their clients to utilize the loans efficiently so as to be able to expand their businesses and be able to pay back their loans. Microfinance sector required innovative ideas beyond traditional financial system. Social intermediation increase human capability and group based lending schemes reduce processing cost and decrease financial risk in relation to providing credit to poor.

v. Increase in Household Net-worth: The available evidence indicates that in many cases microcredit has facilitated the creation and the growth of businesses thus increasing profits which improves their household net worth. It has often generated self-employment:

2.2.14 Impact of Micro-Finance on Poverty Reduction

Attempts to alleviate poverty were carried out worldwide through micro finance programmes that are aimed at helping the poor to accumulate their own capital and invest in employment generating activities. What is meant by poverty and how it is measured and who constitute the poor are aggressively contested issues. In the poverty discussion, the question whether poverty is largely about material needs or whether it is about a much broader set of needs that permit well-being. According to Alex (2014) Poverty has a multiple and complex causes, the poor are not just deprived of basic resources but also they lack access to information that is vital to their lives and livelihoods that is: information about market prices for the goods they produce, information about health, information about the structure and services of public institutions, information about their rights, they lack political prominence and voice in the institutions and power relations that shapes up their lives, they lack access to knowledge, education and skills for development that could improve their livelihoods, they often lack access to markets and institutions, both governmental and societal that could provide them with needed resources and services. They lack access to and information about income-earning opportunities.

The majority of the poor in developing countries especially women lack access to the basic financial services which are essential for them to manage their lives. The poor are excluded from the opportunities of financial services only the informal alternatives that are considered unsuitable left to them. Microfinance is therefore considered as a vital tool to break the vicious circle of poverty which is characterized by low incomes, low savings and low investment. According to Leticia (2012), most institutions regard low income households as “too poor to save”. In order to generate higher incomes, high savings and

more investments, Capital is only one ingredient in the mix of factors necessary for a successful enterprise. Most importantly it requires: entrepreneurial skills and efficient markets to reduce poverty. According to Mecha (2017), the real idea of microfinance is to help the weakest members of civil society who in this case is the poor. A rural micro-entrepreneur may need access to one or more of the following: transport, communications, power, water, storage facilities, a legal system for enforcing contracts and settling disputes.

Apart from infrastructure, micro entrepreneurs need access to information about market trends and skills to run their macro enterprises. Mecha, 2017 calls for differentiation between two categories of the poor, some are able to increase their income by themselves, create business activities that would enable them to move above the poverty line. Those in the second category are unable to do so and would need permanent financial support from microfinance. The latter category would include the poor who have no capacity to undertake any economic activity, either because they lack personal skills or because they are so destitute that they are in no position to develop any meaningful economic activity in the environment in which they live. Those in the first category are described as the “entrepreneurial poor”. The entrepreneurial poor do not need assistance for themselves, but they do need help in setting up an activity that will eventually increase their income. In particular they need assistance in accessing the resources to develop this activity, and to some extent managerial assistance. The non-entrepreneurial poor require direct and continuous assistance to survive. The transfer of resources in terms of credit does not only give the poor access to resources but also the economic empowerment and increased self-reliance (Mecha, 2017).

Finance constraint in agriculture affects not only the purchasing power of producers to procure farm inputs and to cover operating cost but also their capacity to make farm related investments, as well as risk behaviour in technology choice and adoption. These in turn, influence technological efficiencies of the farmers. The goal and logic of micro-credit is to improve the lives of recipients by providing them with small loans to purchase productive assets for entrepreneurial activity.

Finance is important and necessary in nearly all farm ventures. It is a unique resource, since it provides the opportunity to use additional inputs and capital items now and to pay the cost from future earnings. Credit contributes to the improvement of net income in several ways among them are credit increase and maintenance of adequate size. Most farms exhibit decreasing costs as the size of business increases. Credit can be used to take advantage of economies of size. Increased efficiency in the use of credit can make it possible to substitute one resource for another, for example, machinery (tractor) might be substituted for labour as a means of reducing cost and increasing the efficiency of the farm business (Leticia, 2012).

Finance meets seasonal and annual fluctuations in income and expenditures. Cash deficits frequently occurs in crop and animal production from planting to harvest, using credit to smoothen out these fluctuations and to match cash inflows and outflows is essential to efficient operation. Adjust to changing technology and use of chemicals, fertilizers and improve seeds cost a lot. To adopt the modern technology finance is needed. Finance affects economic growth, stagnation or decline financial depression can correlate with sluggish economic growth. Finance has long to play important role in economic development. It plays key roles in agricultural productivity. The important role finance

plays in poverty alleviation is fully recognized in Nigeria. This why Nigerian government established microfinance institutions which run alongside the informal microfinance (Mecha, 2017).

2.3 Analytical Framework

The analytical tools that was used for this study is discussed below;

2.3.1 Income Distribution

The Gini coefficient is a measure of inequality of a distribution and was developed by the Italian statistician Corrado Gini and published in his 1912 paper "Variabilità e mutabilità" ("Variability and Mutability"). It is defined as a ratio with values between 0 and 1 and the numerator is the area between the Lorenz curve of the distribution and the uniform distribution line while the denominator is the area under the uniform distribution line. The Gini index is the Gini coefficient expressed as a percentage, and is equal to the Gini coefficient multiplied by 100. (The Gini coefficient is equal to half of the relative mean difference.) The Gini coefficient is often used to measure income inequality. Here, 0 corresponds to perfect income equality (i.e. everyone has the same income) and 1 corresponds to perfect income inequality (i.e. one person has all the income, while everyone else has zero income). The Gini coefficient can also be used to measure wealth inequality (Gini, 1921). This use requires that no one has a negative net wealth. In ascertaining the mode of income distribution for the beneficiary and non-beneficiary microfinance credit scheme, Gini coefficient index was employed and has been used in the studies of Bakare (2012) and Anyaegbu *et al.* (2019) in ascertaining the mode of income distribution among the respondents

2.3.2 Effect of Participation in the Scheme

A Chow test is a statistical test developed by economist Gregory Chow in 1960. It is an application of F-distribution test which requires the sum of squared errors from three regressions, one from each sample group and also one from pooled data. The Chow test is used to test whether the coefficients in two different regression models on different datasets are equal. The Chow test is typically used in the field of econometrics with time series data to determine if there is a structural break in the data at some point. The Chow test allows us to test for whether or not the regression coefficients of each regression line are equal. If the test determines that the coefficients are not equal between the regression lines, this means there is significant evidence that a structural break exists in the data. In other words, the pattern in the data is significantly different before and after that structural break point. Chow test is often used to confirm whether certain program had effect on the users, which the chow test is used in these study for examining the effect of microfinance among the beneficiaries and non-beneficiaries microfinance credit scheme.

2.3.3 Poverty Level

The Foster-Greer-Thorbecke (FGT) index is a generalized poverty measure developed by Erik Thorbecke, Joel Greer, and James Foster in 1981. It considers the inequality among the poor and allows one to vary the amount of weight on income levels when calculating poverty in the economy. The FGT index is also a decomposable poverty measure, which provides a link between overall poverty and the poverty levels in population subgroups. The change in the FGT index can be separated into a component resulting from the economic growth and a component resulting from the redistribution of income. The FGT

index is calculated as a weighted sum of normalized poverty gaps of the poor. The normalized income gap indicates the income shortfall as a proportion of the poverty line (Foster, 1984).

The degree of poverty aversion (α) can take value 0, 1 and 2. When $\alpha = 0$, the poverty index (PID) becomes Head Count Ratio or Poverty Incidence Index (HCR or PII) i.e. the proportion of people below the poverty line. It will be used to determine the number of households having per capita income below the poverty line. When $\alpha = 1$, PID becomes the Poverty Gap Index (PGI) i.e. the aggregate short fall in income of the household from the poverty line. It measures the difference between actual income and minimum non-poverty income. The proportion of the poverty line (value) that the average poor require to meet the poverty line; the lower the value, the lower the poverty gap. The PGI (P1) gives the depth of poverty at a point in time. When $\alpha = 2$, PID becomes poverty severity index (PSI) i.e. PSI gives more weight to the poverty gap of the poorest. The closer the value is to 1 (100%), the harder the poverty condition of the household. The PSI gives the severity of poverty at a point. In determining the poverty level of beneficiary and non-beneficiary microfinance credit scheme, Foster-Greer-Thorbecke (FGT) was employed and has been used in the studies of Ehrim *et al.* (2017) in determining the poverty level of respondents

2.4 Empirical Review of Related Literatures

The empirical review of related literatures that was used for this study and findings from past studies is discussed below

2.4.1 Empirical studies on Socio-economic characteristics of small-scale fish farmers

A review of previous studies on the socio-economic characteristics of small-scale fish farmers reveals important features of this category of farmers. According to Brummett *et al.* (2010), small holder fish farmers are farmers whose major operation is fishing and also engage in other livelihood activities such as crop farming, trading, agricultural processing, hand craft and transportation. These secondary occupations allow for additional income to meet daily needs and also serve as an additional source of capital for their fish farming activities.

According to FAO (2015), small scale farmers are farmers who depend mostly on household members as their source of labour for their farming operations with primary aim of producing mainly for family consumption while the excess is sold in the market for income to meet other family needs.

According to Okojie *et al.*(2010), small scale farmers have limited access to financial services which their major source of finance is their savings. Their findings further reveals that relatives and friends are also sources of credit to the farmers followed by NGO-MFI and cooperatives while formal institutions such as commercial banks were not accessible to them.

Small scale farmers usually produce at subsistence level and they are typically organized into cooperative and association which provide the link with the market and other support to their members (FAO ,2015). They further classify small scale farmers as farmers who produce small volumes on small land and may produce an export commodity as part of their livelihood activities which are well less well-resourced than the large-scale of

commercial farmers usually considered as part of the informal economy (i.e. may not be registered and tend to be excluded from aspect of labour legislation, lack social protection and have limited records).

The study of Oke *et al.* (2021) on Socioeconomic correlates of catfish production status in Ido Local Government Area of Oyo State, Nigeria using descriptive statistics and ordinary least square (OLS) regression reveals that majority of the farmers were male. Majority were within the active and productive age that was capable of withstanding the stress in catfish production. Majority of the farmers were married with an average household size of five individuals. The fish farmers were highly educated with most of them having tertiary education. Majority of the farmers were members of a cooperative society.

2.4.2 Empirical studies on income inequality distribution

The study of Anyaegbu *et al.* (2019) on the Analysis of Income Distribution Patterns of Broiler Farmers in Imo State using Gini Coefficient and Lorenz curve reveals that income was unequally distributed among the broiler farmers which allows the rich to be getting richer and the poor getting poorer on daily basis. The study of Agwui and Oteh (2014) on analysis of income inequalities and food security among farmers in abia state using Gini-coefficient reveals that the result of Gini coefficient value was 0.67, showing that there was high income inequality in the study area.

The study of Akerele *et al.* (2020) on assessment of income inequality among farming households in Egba division, Ogun State, Nigeria using Gini coefficient and lorenz curve reveals that the income inequality is higher in urban than in the rural areas and that income level, farm size and household size are the factors that contribute to inequality in both rural

and urban areas. Adebayo *et al.* (2011) in studying income distribution among cooperative and non-cooperative maize farmers in Chikun LGA of Kaduna State observed that income was more equally distributed among cooperative farmers than the non cooperative members. This was attributed to more routine visits or contacts with extension agents who taught them application of fertilizers, optimum spacing of crops, methods of improving production, pest and disease control unlike their non- cooperative counterparts. Armed with these information, they applied them so that variations in output was more uniform than for their non-cooperative counterparts, hence the more uniform distribution in their income.

2.4.3 Empirical studies on effect of microfinance credit on incomes and poverty status

Quite a number of researches have been conducted worldwide on the impact of microfinance banks and poverty alleviation on economic growth. Few of these researches are considered relevant and hence reviewed. For instance, Ugochukwu and Onochie (2017) Used the method of OLS regression analysis to examine the impact of micro-credit on poverty reduction in Nigeria from 1999 to 2008. The result showed a negative relationship between micro finance lending and poverty alleviation in Nigeria.

Kehinde *et al.* (2011) carried out a study on impact of microfinance on poverty status of rural communities in Lagos State who are members and non-members of microfinance institutions. The study was analyzed using descriptive statistics, regression Analysis, chi-square and Anova for testing of the hypothesis. The finding of the studies revealed that microfinance has the potential to alleviate poverty especially in reducing vulnerability and increasing level of income. It further revealed that microfinance had significant effect on poverty alleviation.

Okafor *et al.* (2016), using the Error Correction Model (ECM) analytical technique investigated the impact of microcredit on poverty reduction in Nigeria from the period of 1999 to 2014. The research findings show that microfinance credit has negative and non-significant impact on poverty reduction in Nigeria. Interestingly, the size of microfinance banks in Nigeria has a positive impact on poverty reduction. In line with theoretical expectation, interest rate was found to have negative and significant effect on poverty reduction in Nigeria.

Rahman (2010) carried out study on the Islamic micro-finance programme and its impact on rural poverty alleviation. The result of the findings reveals that Microfinance programme has brought a positive impact on the life of the poor as compared to those who do not have access to the scheme and thus reduced poverty.

An empirical investigation by Appah *et al.* (2012), on Analysis of Microfinance and Poverty Reduction in Bayelsa State of Nigeria was carried out using data collected by 286 respondents in 3 LGAs. The data were analyzed using descriptive statistics, Chi-square and Anova. The finding of the study shows that there was a significant relationship between microfinance and poverty reduction.

Imai *et al.* (2010) worked on a study captioned microfinance and household poverty reduction : New Evidence from India. The data were analyzed using descriptive statistics and Tobit regression model. The findings reveal that loans for productive purposes were more important for poverty reduction in rural than urban areas and significant positive effect of Microfinance Institution produce loans on multidimensional welfare indicator.

Emefesi and Yusuf (2014) worked on access and impact of microfinance credit on poverty alleviation among farmers in Kirfi LGA of Bauch State. Data from respondents were collected through cluster sampling techniques from small scale farmers such as cooperative groups, farmers association, and women group who are mainly beneficiaries of micro finance. The villages sampled were Gawo, kirfin gasa, Cheledi, Wuro, Madaki, Zamani bukakko, Bedoji, Baba, Badara, Guyaba and Sindigawo. The result shows that microfinance credit facility has positive impact on rural farmers' poverty alleviation status and also identified usability of agriculture bank in their community as a major challenge to their accessing microfinance credit in their locality.

Olawuyi *et al.* (2010) worked on the effects of microfinance credit scheme on crop farmers' Revenue in Ogbomoso South LGA of Oyo State using descriptive statistics and ordinary least square estimation technique to analyze data collected from 60 respondents. The finding of the research shows that Microfinance credit scheme increased the revenue of the users in the study area.

Rajendran and Raja (2010) carried out a study on the impact of Microfinance on Poverty status in India using a well-structured questionnaire for data collection while simple statistical tools and ANOVA for data analysis. The findings shows that Microfinance and self-help groups are effective in reducing poverty, creating awareness, empowering women and ensuring sustainability of nation's environment.

Kehinde *et al.* (2011) in studying the effects of microcredit on household food poverty in Iwo area of Osun State, Nigeria found out that credit had a positive effect on the participants income and household's poverty status. A comparison of the poverty status of

the microcredit participants and non-participants however shows that microcredit alone may not be the sole instrument for poverty alleviation as factors such as improved seed supply and huge investments in social infrastructure and human capital development are needed to play a key role in poverty alleviation.

2.4.4 Empirical studies on factor hindering fish farmers' access to credit

Several factors hinder fish farmer's access to credit which different researchers have delved into. According to Okojie *et al.* (2010), lack of collateral and information on procedure regarding the access to credit from banks hinder access to credit from formal institution.

Badiru (2010) noted that small –scale farmer's low access to credit is due to the requirement of collateral and perceived high risk and uncertainty of agricultural production. He further noted in his findings that unstable markets tied to uncertain harvest increased lenders perception of risk in lending to small-scale farmers while misallocation of credit to non-intended beneficiaries in government backed credit programmes, high interest rate, loan defaults and poor credit information are factors impeding farmers access to credits.

According to Biam *et al.* (2010), high charges on interest rate is the major problem hindering small-scale farmers access to credit. Badiru (2010) also agreed that high interest rate constituted a major hindrance to access to credit by small scale farmers, Badiru (2010) also noted that loan default could hinder farmers access to credit. Olawuyi *et al.* (2010) observed that the amount of loan offered to farmers was one of the factors hindering farmers access to credit as they observed that farmers were offered small amount of credit which therefore inform their small holding operations.

CHAPTER THREE

4.0

METHODOLOGY

4.1 Study Area

The research was carried out in Niger State, Nigeria. The state was created in 1976 from the defunct North- Western State and it is located in the Southern Guinea Savannah agro-ecological and North- central geo-political zones of Nigeria. The State lies between Latitude 8° 11'N and 11°20'N and Longitudes 4° 30'E and 7° 20'E. It is bordered on the South-East by the Federal Capital Territory (FCT), Abuja and on the North-East by Kaduna State. It is also bordered on the West, North and South by Kebbi, Kogi, Kwara and Zamfara States respectively. The State also share foreign border with the Republic of Benin in North-West. The capital of the State is Minna and other major cities are Suleja, Bida and Kontagora.

The state comprises of 25 Local Government Areas (LGAs) and covers about 86,000Sqkm (or about 8.6 Million hectares) representing about 9.3% of the total land area of the country. The major food crops produced are: maize, sorghum, millet, melon, soya bean, beniseed, cowpea, groundnut, yam and rice at subsistence level. At the end of 2019, the poverty rate of Niger State was estimated at 41.8% (National Bureau of Statistics 2021). Based on the annual population change 3.4% from 2006 to 2022, the state has a projected population of 6,783,300 as at 2022 (National Population Commission, 2022). The state has three principal ethnic groups which are the Nupe, the Gwari and the Hausa people. Other minority groups are the Ayadi, Abishiwa, Basa, Bauchi, Bulana, Dibo, Dukawa, Gada,

Ganagana, Godara, Kadara, Kadanda, Kambari, Kamulu, Koro, Ingwai, Muachi and Shigini people.

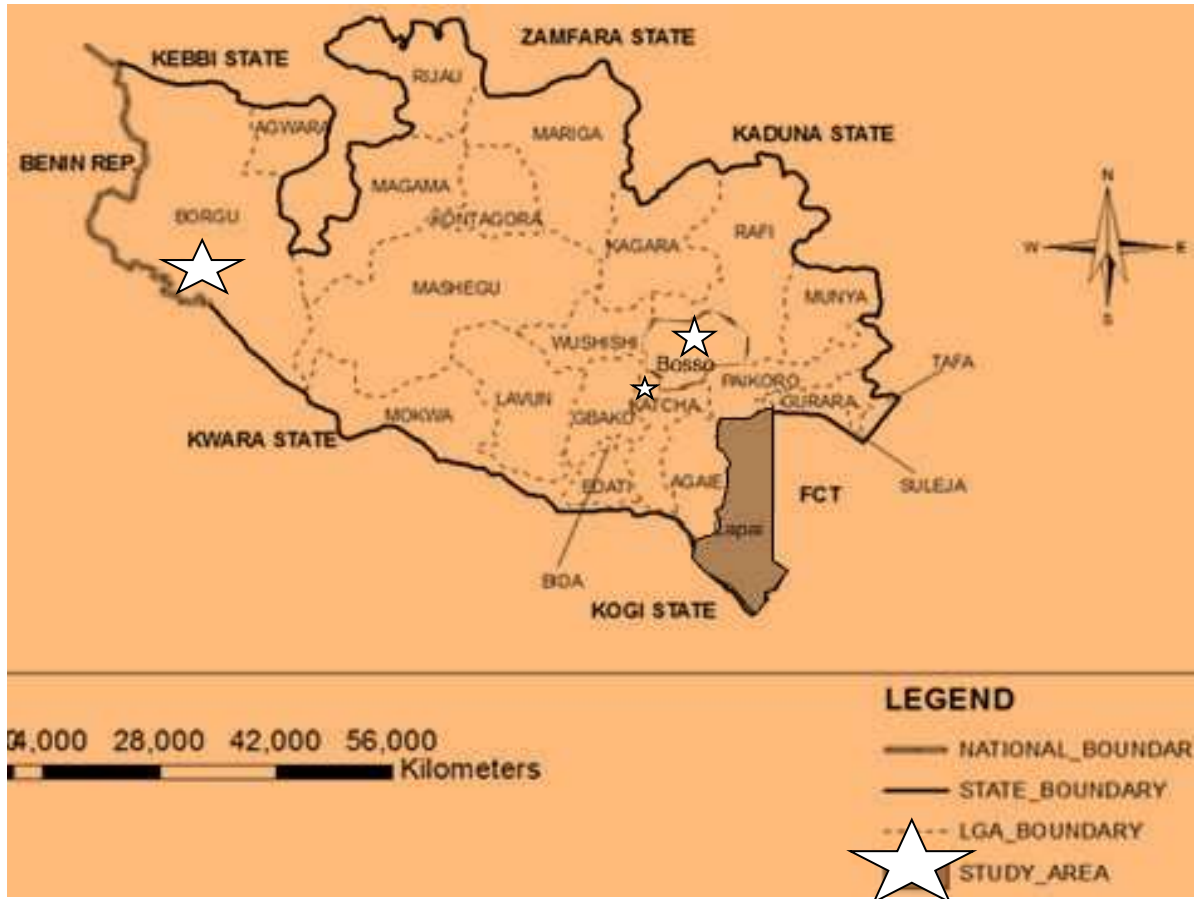
The state experiences both wet and dry seasons with annual rainfall varying from 1,100mm in the northern part to 1,600mm in the Southern part of the state. The rainy season lasts for about 150 days in the Northern part and 120 days in the southern part. The state is named after the River Niger. Two major Nigeria hydroelectric power stations, the Shiroro and Kainji Dams are located in the State. The largest national park in Nigeria which is the Kainji National Park is located in the state. The park that contains the Kainji lake, Borgu Game Reserve and the Zugurma Game reserve and this make the state a tourism destination in the country.



Figure 3.1: Map of Nigeria showing Niger State

Source: Niger State Agricultural Data (2012)

Figure 3.1: Map of Nigeria, showing the study area



Source: Niger State Agricultural Data (2012)
Figure 3.2: Map of Niger State, showing the study area

3.2 Sampling Techniques and Sample Size

This study uses the multi-stage sampling techniques. The Niger State consists of 25 Local Government Areas (LGAs) with three Niger State Agricultural Mechanization and Development Authority zones (NAMDA). The zones are: Zone 1 (Niger South), Zone 2 (Niger Central) and Zone 3 (Niger North). Microfinance Banks (MFBs) are available in all the LGA with each LGA having at least one MFB. The first stage involved a random selection of one LGAs from each of the zones. The second stage involved the random selection of two villages from each of the selected LGA. Thirdly, a proportionate to size sampling method using Taro Yamani formula was used to select the sample size of the

respondents from each of the selected villages). The proportional to size sampling formula is given below:

$$n = \frac{N}{1 + N(e)^2} \quad (3.1)$$

Where :

n= sample size,

N= population size and

e= level of tolerable error which will be taken as 0.05.

Using this method 117 beneficiary and 117 non-beneficiary fish farmers were randomly selected from Katcha (Zone 1), Bosso (Zone 2) and Borgu (Zone 3) respectively. The listing of the ADP zones in the state, the LGAs and the number of respondents sampled are presented in Table 3.1

Table 3.1: Distribution of the ADP Zones, LGAs and the number of farmers sampled

Zones	LGA	District	Beneficiaries		Non-beneficiaries	
			Sampling Frame	Sample size	Sampling Frame	Sample size
Zone 1	Katcha	Katcha	30	28	-	-
		Badeggi			39	35
Zone 2	Bosso	Bosso	41	47	-	-
		Chanchaga			45	40
Zone 3	Borgu	Marafa	60	52	-	-
		Wawa	-	-	47	42
Total Number of Respondents			131	117	131	117

Source: Authors Pre-field survey 2021

3.3 Data Collection Method

Data for this study were collected from primary source. The primary data were obtained from field survey using well-structured questionnaire. It was also complimented with interview scheduled for the non-literate respondents. Trained enumerators assisted the researcher in the data collection.

3.4 Analytical Techniques

Descriptive statistics such as means, frequencies, percentages and tables were used to examine the socio-economic characteristics of the respondents (Objective I) and to ascertain the factors hindering small scale fish farmers' access to microfinance credits scheme (Objective VI). The likely differential in income distribution of beneficiaries and non-beneficiaries of microfinance credit scheme (Objective II) was analysed using Gini Coefficient. The Chow test was used to examine the effect of participation in the microfinance scheme on the income of the respondents in the study area (Objective III). The poverty level of farmers in the study area (Objective IV) was examined using the Foster, Greer and Thorbecke (FGT) weighted poverty indices. The Propensity Score Matching Method (PSMM) was used to examine the effect of participation in the microfinance scheme on poverty alleviation of the respondents in the study area (Objective V). The hypothesis was tested using t-test statistics.

3.4.1 Gini Coefficient

The Gini coefficient was employed to examine the likely differentials in the distribution of income of the beneficiaries and non-beneficiaries of the microfinance credit scheme (Objective II). The Gini coefficient is a measure of statistical dispersion mostly used to

measure inequality among individuals, such as level of income and wealth (Gini, 1921). The Gini coefficient value is between 0 and 1. A Gini coefficient of zero shows perfect equality where everyone has exactly equal income, while a Gini coefficient of less than 0.2 represents perfect income equality, 0.2-0.3 represent relative equality, 0.3-0.4 represent adequate equality, 0.4-0.5 represent big income gap and above 0.5 represents severe income gap (Teng *et al.*, 2011). Therefore a low Gini coefficient indicates a more equal distribution of income with 0 corresponding to complete equality while higher Gini coefficients indicates more unequal distribution with 1 corresponding to complete inequality.

$$G = 1 - \frac{\sum XY}{n^2} \quad (3.2)$$

Where:

G = Gini coefficient

X = proportion of the fish farmers

Y = cumulative proportion of total income

Σ = summation sign.

3.4.2 The chow test

Chow test was used to examine the effect of participation in the microfinance scheme on the income of the respondents in the study area (Objective III). Green, often use chow test statistics in programme evaluation to ascertain whether the programme had effect on the respondents. The Chow test is an application of F-distribution test. It required the sum of squared errors from three regressions, one from each sample group and also one from the pooled data. The decision rule is that if the Chow F calculated is greater than the value of

the F-tabulated, then the participation in the Microfinance credit scheme had significant effect on the income of the beneficiaries, otherwise it did not.

The Chow F-statistics is computed as follows:

$$F = \frac{P(RSS_P - (RSS_1 + RSS_2))/K}{(RSS_1 + RSS_2)/(N_1 + N_2 - 2K)} \quad (3.3)$$

Where:

F= Test statistics

RSS = Residual Sum of Squares for pooled sample,

RSS₁ = Residual Sum of squares for beneficiaries of the scheme,

RSS₂ = Residual Sum of squares for non-beneficiaries of the scheme,

N₁ = Total number of sampled beneficiaries,

N₂ = Total number of sampled non-beneficiaries and

K = Number of parameters

To generate the residual error sum of squares, four functional forms were tried to choose a production function fitted for the data collected and the model which was best based on the normal economic and statistical criteria was used for further analysis.

The implicit form of the production function is specified as:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, e) \quad (3.4)$$

Where:

Y = Total income (₦),

X_1 = Capital inputs (₦)

X_2 = Years in microfinance scheme (Years)

X_3 = Participation in microfinance scheme (1 if yes, 0 if no)

X_4 = Age (Years)

X_5 = Farming experience (Years)

X_6 = Water input (Liters)

X_7 = Feeds input (Kg)

X_8 = Pond size (m²)

X_9 = Fingerling input (Kg)

e = Error term.

The explicit forms of the functional forms fitted to the data are:

Linear:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + e \quad (3.5)$$

Semi-log:

$$Y = \ln\beta_0 + \beta_1\ln X_1 + \beta_2\ln X_2 + \beta_3\ln X_3 + \beta_4\ln X_4 + \beta_5\ln X_5 + \beta_6\ln X_6 + \beta_7\ln X_7 + \beta_8\ln X_8 + \beta_9\ln X_9 + e \text{ _____} \quad (3.6)$$

Cobb- Douglas:

$$\ln Y = \ln\beta_0 + \beta_1\ln X_1 + \beta_2\ln X_2 + \beta_3\ln X_3 + \beta_4\ln X_4 + \beta_5\ln X_5 + \beta_6\ln X_6 + \beta_7\ln X_7 + \beta_8\ln X_8 + \beta_9\ln X_9 + e \text{ _____} \quad (3.7)$$

Exponential:

$$\ln Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + e \text{ _____} \quad (3.8)$$

Where:

b_0 = Constant

$b_1 - b_9$ = Estimated regression coefficients

$X_1 - X_9$ = Independent variables

e = Error term

3.4.3 The foster-greer- thorbeeke model

The generalized measure of poverty within an economy is the Foster, Greer and Thorbeek (FGT) metrics. It is a measure proposed by Foster, Greer and Thorbecke (1984) and also adopted by Kehinde *et al.* (2011). It measures the poverty level and is weighted by α . It considers the inequality among the poor. The Foster, Greer and Thorbecke Poverty indices

were used to achieve objective (iv) for the quantitative poverty level assessment of fish farmers in the study area. The formula is given below as:

$$FGT_{\alpha} = \frac{1}{n} \sum_{j=1}^q \frac{(p_l - y_i)^{\alpha}}{p_l} \text{-----} (3.9)$$

Where:

FGT_{α} = the poverty measure,

p_l = the poverty line adopted for this study,

y_i = the income of the i th household per annum,

n = the number of respondents,

q = the number of poor (those with income at or below the poverty line)

α = the degree of poverty aversion

The international poverty line of \$1.90 a day (World Bank, 2019) was used to determine the poverty status of the farming households. At an exchange rate of ₦412.99 per dollar in 2021, the poverty line translated to ₦784.68 per day. Households with per capita income below ₦784.68 per day were classified as poor while those with per capita income above or equivalent of ₦784.68 per day were classified as non-poor.

3.4.4 The propensity score estimation

Propensity score estimation method was used to examine the effect of participation in the microfinance scheme on the poverty status of the respondents in the study area (Objective v). Propensity score matching method requires the Propensity Score Estimation (PSE)

using the logit model in estimating the propensity score for the matching. The formula is given below as:

$$ATE = E \left[\frac{Y_i(1) - Y_i(0)}{Z=1} \right] = \frac{E[Y_i(1)]}{Z=1} - \frac{E[Y_i(0)]}{Z=1} \quad (3.10)$$

Where;

ATE= Average treatment effect on the treated (participant)

E= Average value

Y_i1 = Average poverty status of the beneficiaries

Y_i0 = Average poverty status of the non-beneficiaries

$Z-1$ = Treatment status if a beneficiary while zero if otherwise

3.4.5 Paired samples t-test

The paired sample t-test was used to test the hypothesis that there is a significant difference between the income level of small scale fish farmers' beneficiaries and non-beneficiaries of microfinance credit scheme.

The formula is given as:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{SP^2 \sqrt{1/n_1 + 1/n_2}} \quad (3.11)$$

Where:

t = calculated t-value,

\bar{X}_1 = mean fish farm income of beneficiaries of microfinance credit scheme,

\bar{X}_2 = mean fish farm income of non-beneficiaries of microfinance credit scheme,

S_p^2 = pooled variance of the population,

n_1 = number of sampled beneficiaries of microfinance credit scheme,

n_2 = number of sampled non-beneficiaries of microfinance credit scheme.

CHAPTER FOUR

4.0

RESULTS AND DISCUSSION

This chapter presents the results emanating from this study. It also discusses the various findings of the study.

4.1 Socio economic Characteristics of the Respondents

The socio economic characteristics of the respondents in this study such as age, gender, education level, marital status, household size, primary occupation, farming experience, and membership of cooperatives society are presented as follows.

Table 4.1: Distribution of respondents according to socio-economic characteristics in the study area

Variables	Beneficiary		Non-Beneficiary		Pooled		Mean
	Freq*	%	Freq*	%	Freq*	%	
Age (Years)							
< 20	2	1.7	0	0	2	0.9	
21-40	56	47.9	81	69.2	137	58.5	
41-60	57	48.7	36	30.8	93	39.7	40
> 60	2	1.7	0	0	2	0.9	
Gender							
Male	95	81.2	100	85.5	195	83.3	
Female	22	18.8	17	14.5	39	16.7	
Education							
Primary Education	9	7.7	38	32.5	47	20.1	
Secondary Education	42	35.9	37	31.6	79	33.8	
Tertiary Education	50	42.7	24	20.5	74	31.6	
Quaranic Education	4	3.4	6	5.1	10	4.3	
None	12	10.3	12	10.3	24	10.3	
Marital Status							
Married	91	77.8	106	90.6	197	84.2	
Single	24	20.5	8	6.8	32	13.7	
Divorced	2	1.7	2	1.7	4	1.7	
Widowed	0	0.0	1	0.9	1	0.4	
Household Size							
1-3	39	33.3	11	9.4	50	21.4	
4-6	58	49.6	86	73.5	114	61.5	
7-9	16	13.7	20	17.1	36	15.4	5
>9	4	3.9	0	0	4	1.7	
Total	117	100	117	100	117	100	

Source: Field survey, 2021

Note: * Implies multiple responses recorded

Table 4.1 shows the distribution of fish farmers with respect to their socio economic characteristics. Majority of the beneficiaries (48.7%) and non-beneficiaries (69.2%) fish farmers were within the age range of 41-60years and 21-40years. This implies that the majority of the fish farmers were within the active and productive age, capable of withstanding the stress in fish production. The findings of this study corroborated with that of Oke *et al.* (2021) who reported that fish farmer's ability to withstand stress decreases as their age increases. Majority of both beneficiaries (81.2%) and non-beneficiaries (85.5%) fish farmers were male. This result can be justified by the assertion of Brummett *et al.* (2010) and Oke *et al.* (2021) that fishing activities are mostly dominated by men. Table 4.1 further shows that majority of both beneficiaries (78.6%) and non-beneficiaries (52.1%) of the fish farmers are literate having at least secondary education. This means that fish farming is dominated by the educated class and mostly by those armed with high level of education. These results agree with that of Kehinde *et al.* (2011), Oke *et al.* (2021) and Biam *et al.* (2010) who reported in their studies that the educational level attained by farmer's increases their ability to understand and evaluate new innovations and production technologies in order to increase their productivity. In Table 4.1, it was discovered that majority of both beneficiaries (77.8%) and non-beneficiaries (90.6%) fish farmers were married while very few were single, widowed or divorced. The finding of this study corroborates with that of Oke *et al.* (2021) who opined that married couple contribute to supply of farm labour for agricultural activities. The mean household size for both beneficiary and non-beneficiary fish farmers was found to be five persons per household, this might suggest availability of family labour for agricultural activities. This result agrees with that of Oke *et al.* (2021) and Kehinde *et al.* (2011) who noted that larger household size enhances labour for agricultural activities.

Table 4.2: Continuation to the distribution of respondents according to socio-economic characteristics in the study area

Variables	Beneficiary		Non-Beneficiary		Pooled		Mean
	Freq*	%	Freq*	%	Freq*	%	
Secondary Occupation							
Crop farming	50	42.7	65	55.5	115	49.2	
Farm labourer	2	1.7	4	3.4	6	2.6	
Civil servant	46	39.4	32	27.4	78	33.4	
Trading	9	7.7	6	5.1	15	6.4	
Others	10	8.5	10	8.6	20	8.5	
Income from Sec. Occupation (₦)							
1-50,000	3	2.6	99	84.6	102	43.6	
50,001-100,000	45	38.5	5	4.3	50	21.4	
100,001-150,000	12	10.3	10	8.5	22	9.4	
150,001-200,000	18	15.4	3	2.6	21	9.0	
>200,000	39	33.3	0	0	39	16.7	
Fishing Experience(Years)							
1-3	1	0.9	1	0.9	2	0.9	
4-6	5	4.3	2	1.7	7	3.0	
7-9	29	24.8	34	29.1	63	26.9	
>9	82	70.1	80	68.4	162	69.2	15
Loan Received (₦)							
<200,000	20	17.1	-	-	-	-	
200,000 - 400,000	87	74.4	-	-	-	-	
400,000 – 600,000	6	5.1	-	-	-	-	
>600,000	4	3.5	-	-	-	-	
Co-operative Membership							
Yes	102	87.2	24	20.5	126	53.7	
No	15	12.8	93	79.5	108	46.3	
Extension Contact							
Yes	87	74.4	94	80.3	181	77.4	
No	30	25.6	23	19.7	53	22.6	
Household Food Expenditure (₦)							
<30,000	12	10.3	2	1.8	14	6.0	
30,000-60,000	16	13.7	113	96.6	129	54.8	
60,001-90,000	84	71.9	2	1.8	86	37.0	
>90,000	5	4.3	0	0.0	5		
Other Household Expenditure							
<20,000	27	23.0	84	71.8	111	47.1	
20,001-40,000	59	50.4	16	13.7	75	32.3	
40,001-60,000	30	25.6	17	14.6	47	20.2	
>60000	1	0.9	0	0	1	0.43	
Farm Income(₦)							
<600,000	6	5.1	29	24.7	35	15.1	
600,001-1,200,000	28	24.5	74	63.3	102	43.4	
1,200,001-1,800,000	37	30.7	14	12.0	51	21.6	
>1,80,0000	46	39.7	0	0	46	19.6	
Total	117	100	117	100	234	100	

Source: Field survey, 2021

Note: * Implies multiple responses recorded

Table 4.2 shows the distribution of fish farmers with respect to their socio economic characteristics. The result shows that some of the fish farmers engaged in other occupation apart from fish farming. The study reveals that both beneficiaries (42.7%) and non-beneficiaries (55.5%) of microfinance credit were into crop farming as their secondary source of income. The beneficiaries (38.5. %) and non-beneficiaries (84.6%) earned between ₦50001 to ₦100000 and ₦1 to ₦50000 as income from their secondary occupation respectively. The findings of this study corroborated that of Asiama and Osei (2007) who opined that majority of the beneficiaries of Microfinance credit schemes are into crop farming as their secondary occupation. The mean year of experience for both beneficiary and non-beneficiary fish farmers was 15 years. Experience helps farmers to plan and set a realistic goal on how to organize production inputs for increased agricultural production. This study's corroborates that of Iheke *et al.* (2011) who opined that farmers count more on their experience for enhance agricultural productivity and efficiency.

Table 4.2 further shows that majority (74.4%) of the beneficiaries received loan between ₦200,001 to ₦400,000. Credit being an important production input has great influence on agricultural productivity and output of farmers and might improve their level of income and standard of living. The finding of this study corroborates that of Iheke (2010) who opined that credit is crucial in purchasing production inputs which enhances agricultural productivity. Co-operative association plays a crucial role in accessing finance for development of agricultural production. This is because majority of microcredit- lenders mostly prefer to lend to an association or groups for easy processing of loans and easier recovery of loans. The result in table 4.2 shows that majority (87.2%) of the beneficiaries are members of co-operative societies while majority of non-beneficiary (79.5%) did not

belong to any cooperative association. The finding corroborated with that of Abraham (2018) who noted that microfinance provides microcredit to poor household for poverty alleviation using groups such co-operative societies. Furthermore, the study shows that majority of the beneficiaries (74.4%) and non-beneficiaries (80.3%) had extension visit. The implication of this is that farmers will have access to information on production and also innovations which could the help to improve their agricultural productivity. This finding correlates that of Iheke (2010) who noted that extension service help farmers to increase farm productivity through access to vital information that can improve their level of income. The result in Table 4.2 further show that the beneficiaries (29.4%) sourced their capital for farm business from microfinance bank and personal savings while non-beneficiaries (40.9%) sourced their capital for farm business from personal savings and commercial banks respectively.

The result in Table 4.2 also shows that majority (71.9%) of the beneficiaries spent between ₦60,001 to ₦90,000 while majority (96.6%) of the non-beneficiaries spent between ₦30,000 to ₦60,000 monthly on household food expenditure. The result indicates that the beneficiaries spent more amounts on food items than the non-beneficiaries. This could be as a result of more income accruing to the beneficiaries due to increased output which is used to meet their food needs. The study further show that (50.4%) of the beneficiaries spent between ₦20,000 to ₦40,000 on food expenditure against 71.8% of below ₦20,000. The result in Table 4.2 shows that 39.7% of the beneficiaries realized more than ₦1,000,000 annually while majority (63.3%) of the non-beneficiary realized between ₦200,000 to ₦600,000. This suggests that the beneficiaries realized higher income from their fishing activities annually than the non-beneficiaries. The reason could be as a result

of the access to production capital provided by Microfinance Banks to the beneficiaries. These findings corroborate that of Biam *et al.* (2010) who noted that changes in farm operation of the beneficiaries occurred as a result of MFB's intervention to the beneficiaries through credit provisions which assist in purchasing production inputs such as fingerlings, feeds and fertilizers which help in boosting the output realized.

4.2 Likely Differentials on Income

The Gini Coefficient was used to examine likely differentials on income of the respondents. The Gini coefficient was computed to obtain the numerical value of the equality or inequality in the income of the beneficiaries and non-beneficiaries respectively. The farmers' income was used in the analysis of the income distribution.

4.2.1 Computation of gini coefficient for the farmers

The range of income of the beneficiaries, their frequencies and percentage cumulative income were computed as shown in Table 4.3

Table 4.3: Computation of Gini coefficient for the fish farmers

Income range	NFF	PFF	CPFF (X)	TVI	PTI	CPTI (Y)	XY
Beneficiaries data							
Less than 500,000	-	-	-	-	-	-	-
500,001 – 750,000	2	0.01709	0.01709	1,491,500	0.00767	0.00767	0.00013
750,001 – 1,000,000	7	0.05983	0.07692	6,978,000	0.03590	0.04357	0.00261
1,000,001 – 1,250,000	15	0.12821	0.20513	1,860,500,0	0.09571	0.13929	0.01786
1,250,001 – 1,500,000	22	0.18803	0.39316	3,298,532,0	0.16969	0.30898	0.05810
1,500,001 – 1,750,000	35	0.29915	0.69231	6,108,250,0	0.31424	0.62322	0.18643
1,750,001 – ,2000,000	14	0.11966	0.81197	2,481,485,0	0.12766	0.75088	0.08985
2,00,0001 – 2,250,000	11	0.09402	0.90598	2,247,120,0	0.11560	0.86649	0.08146
2,250,001 – 2,500,000	7	0.05983	0.96581	1,586,670,0	0.08163	0.94811	0.05672
Above 2,500,000	4	0.03419	1.000z00	1,008,550,0	0.05189	1.00000	0.03419
Total	117	1.00000		194380570	1.00000		
						Gini coefficient (1-\sumXY)	0.47265
Non-beneficiaries data							
<500,000	2	0.01709	0.01709	496,000	0.00367	0.00367	0.00006
500,001 – 750,000	12	0.10256	0.11966	6,782,000	0.05014	0.05381	0.00552
750,001 – 1,000,000	21	0.17949	0.29915	1,582,700,0	0.11702	0.17082	0.03066
1,000,001 –1,250,000	44	0.37607	0.67521	4,708,750,0	0.34814	0.51896	0.19516
1,250,001 – 1,500,000	16	0.13675	0.81197	2,3697,000	0.17520	0.69416	0.09493
1,500,001 – 1,750,000	11	0.09402	0.90598	1,916,940,0	0.14173	0.83589	0.07859
1,750,001 – 2,000,000	8	0.06838	0.97436	1,581,200,0	0.11690	0.95279	0.06515
2,000,001 – 2,250,000	3	0.02564	1.00000	6,385,000	0.04721	1.00000	0.02564
Total	117	1.00000		1,352,559,00	1.00000		0.49571
						Gini coefficient (1-\sumXY)	0.50429
Pooled data							
Less than 500,000	2	0.00855	0.00855	496,000	0.00150	0.00150	0.00001
500,001 – 750,000	14	0.05983	0.06838	8,273,500	0.02510	0.02660	0.00159
750,001 – 1,000,000	28	0.11966	0.18803	2,280,5000	0.06918	0.09579	0.01146
1,000,001 –1,250,000	59	0.25214	0.44017	6,569,2500	0.19929	0.29507	0.07440
1,250,001 – 1,500,000	38	0.16239	0.60256	5,668,2320	0.17195	0.46703	0.07584
1,500,001 – 1,750,000	46	0.19658	0.79915	8,025,1900	0.24346	0.71048	0.13967
1,750,001 – 2,000,000	22	0.09402	0.89316	4,062,6850	0.12325	0.83373	0.07838
2,000,001 – 2,250,000	14	0.05983	0.95299	2,885,6200	0.08754	0.92127	0.05512
2,250,001 – 2,500,000	7	0.02991	0.98291	1,586,6700	0.04813	0.96940	0.02900
Above 2,500,000	4	0.01709	1.00000	1,008,5500	0.03060	1.00000	0.01709
Total	234	1.00000		3,296,364,70	1.00000		0.48256
						Gini coefficient (1-\sumXY)	0.51744

Source: Computed from field survey data, 2021.

NFF = Number of fish farmers; PFF = Proportion of fish farmers; CPFF = Cumulative proportion of fish farmers; TVI = Total value of income; PTI = Proportion of total income; CPTI = Cumulative proportion of total income.

The Gini coefficient of the beneficiaries was computed as 0.47 while the Gini coefficient of the non-beneficiaries was computed as 0.50. The results show that the Gini coefficient value of 0.47 for the beneficiaries was lower than the Gini coefficient of 0.50 for the non-beneficiaries respondents in the study area. The lower Gini coefficient for the beneficiaries is an indication of equality in the income distribution of the beneficiaries than the non-beneficiaries. Thus income distribution was more equitable for the beneficiaries than the non-beneficiaries. This finding corroborates the findings of Adebayo *et al.* (2011) between co-operative and non-cooperative farmers.

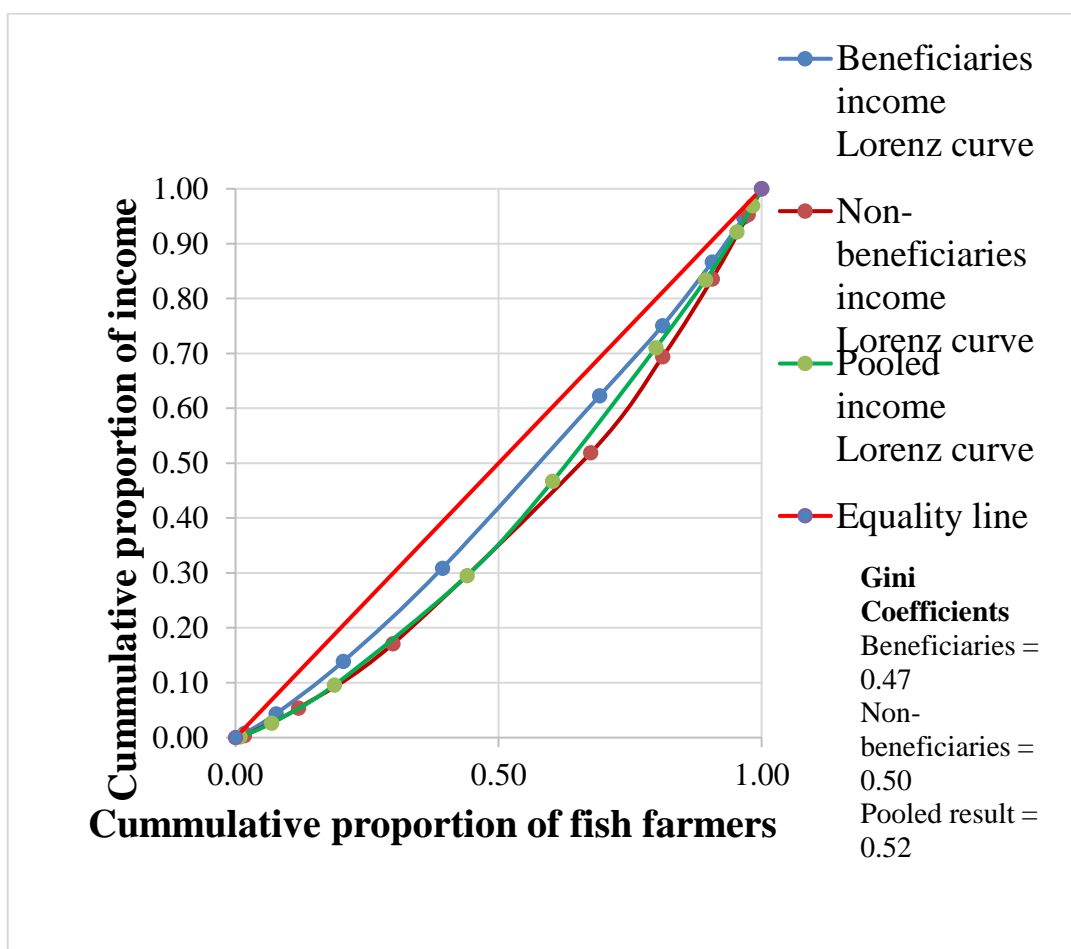


Figure 4.1: Lorenz curve of income distribution among fish farmers
Source: Computed from field survey data 2021.

The Lorenz curve above represents the distribution of income, basically the further away the curve from the equality line which is represented by the straight diagonal line, the higher the level of inequality. The non-beneficiary curve is the further away from the equality line than that of the beneficiary, indicating that income is more equally distributed among the beneficiaries than the non-beneficiaries.

4.3 Effect of Participation in the Microfinance Scheme

The Chow test was used to ascertain whether the microfinance credit scheme had effect on the income of the respondents. The Chow test is an F-distribution test which was determined using the sum of square error of the lead equation from the regression result of the beneficiaries, non-beneficiaries and the pooled data. Four functional forms were fitted for the data collected to generate the error sum of square.

Table 4.4: Summary of regression results for the fish farmers

Variables	Beneficiaries Double-Log	Non-beneficiaries Linear	Pooled Exponential
Constant	2.058 (2.37)**	170506.7 (1.24) ^{NS}	13.391 (99.69)***
Pond size	-0.004 (-0.13) ^{NS}	2.171 (3.19)***	1.931 (3.20)***
Fingerling input	0.952 (24.54)***	25.103 (35.16)***	0.001 (15.87)***
Feed input	0.064 (0.73) ^{NS}	-1.933 (-0.77) ^{NS}	-7.641 (-0.03) ^{NS}
Capital input	-0.018 (-0.56) ^{NS}	-175598.1 (-2.73)***	-0.171 (-2.53)**
Fish farming experience	-0.067 (-1.68)*	-5.778 (-2.40)**	-3.791 (-2.36)**
Years in microfinance scheme	0.127 (2.47)**	-2.433 (-0.55) ^{NS}	-5.67e-07 (-0.15) ^{NS}
Participation in microfinance scheme	0.086 (1.98)*	-778.978 (-0.21)	-0.007 (-1.26) ^{NS}
Age	0.151 (1.83)*	5186.577 (1.33) ^{NS}	0.008 (2.23)**
Water input	-0.081 (-1.73)*	-25456.35 (-1.84)*	-0.011 (-2.06)**
Diagnostic Statistics			
R ²	0.944	0.967	0.808
R ² Adjusted	0.938	0.963	0.798
F-cal	146.51***	253.95***	77.70***

Source: Computations from Field survey, 2021

Note: ***, ** and * implies statistically significant at 1%, 5% and 10% level of probability respectively.

The result of regression analysis for the fish farmers is shown in Table 4.4. The results in Table 4.4 show that for the beneficiary fish farmers, the Double-Log functional form had the highest R² value of 0.944 and Adjusted R² value of 0.937 and also F-ratio of 146.51 compared to other functional forms. It also had the highest number of significant explanatory variables and was adjudged to be the best fit equation for the beneficiaries. In case of the non-beneficiary fish farmers, linear functional form had the highest R² value of 0.967 and Adjusted R² value of 0.9632 with F-ratio of 253.95 compared to other functional forms. It also had the highest number of significant explanatory variables and was adjudged to be the best fit equation for the non-beneficiaries. Also for the pooled data, the exponential functional form had the R² value of 0.808 and Adjusted R² value of 0.798 and also F-ratio of 77.70 compared to other functional forms. Exponential functional form had the highest number of significant explanatory variables and was adjudged to be the best fit equation for the pooled data.

Table 4.5: ANOVA results for the Fish Farmers

Model	Sum of Square	Df	Mean Square	F	Sig.
Beneficiaries					
Regression	27.20	12	2.27	146.51***	.000
Residual sum of square	1.61	104	0.02		
Total	28.81	116			
Non-beneficiaries					
Regression	8.19	12	6.82982	253.95***	.000
Residual sum of square	2.80	104	2.68940		
Total	10.99	116			
Pooled data					
Regression	107.31	12	8.9422195	77.70	.000
Residual sum of square	25.44	221	0.11509242		
Total	132.75	233	0.569708407		

Source: Computations from field survey, 2021

*** Implies significant at 0.01 level of probability.

$$\text{Chow } F = \frac{\text{RSS}_p - (\text{RSS}_1 + \text{RSS}_2)/K}{(\text{RSS}_1 + \text{RSS}_2)/(N_1 + N_2 - 2K)} = \frac{25.44 - (1.61 + 2.80)/13}{(1.61 + 2.80)/(117 + 117) - 2(13)} = \frac{2.05}{0.021} = 97.62$$

The Chow F calculated was determined from the Residual Sum of Squares (RSS) in the Analysis of Variance (ANOVA) table of the lead equations for the beneficiaries, non-beneficiaries and pooled data. The estimated value for the Chow F- statistic is 97.62 and since it is greater than the table value of 2.14 for a sample size of 234 at 6 degrees of freedom and 5% probability level, it is therefore concluded that the Microfinance credit scheme had positive significant effect on the income levels of the beneficiaries in the study area. The result of this finding corroborate with that of Nosiru (2010) and Kehinde *et al.* (2011) who found out that credit had positive effect on the beneficiary income.

4.4 Poverty Level of the Fish Farmers

The Foster-Greer-Thorbecke (FGT) model was used to determine the poverty level of fish farmers in the study area. The poverty line for this study was established as ₦785/day, household that earned less than this amount were regarded as poor while households that earned this amount and above were regarded as non-poor. The computed poverty level of the respondents was presented in Figure 4. 2.

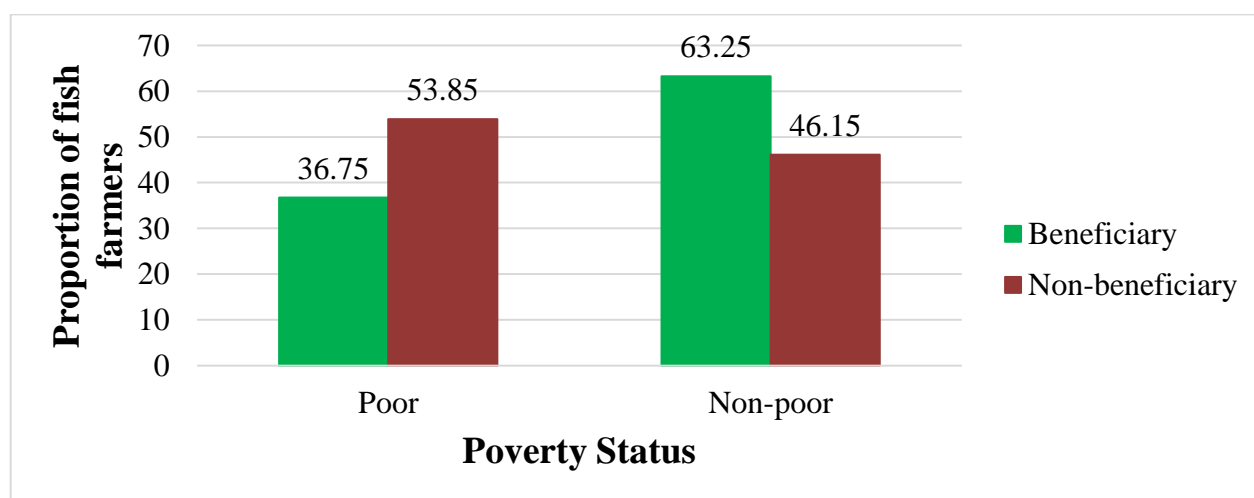


Figure 4.2: Poverty level of the respondents

Source: Computations from field survey, 2021

Poverty line ₦785/day

Using the established poverty lines, the poverty status results from Figure 4.2 showed that among the beneficiaries, 36.75% of the fish farmers were poor while among the non-beneficiaries, 53.85% of the fish farmers were poor. This implies that proportion of the non-beneficiaries that were poor is more than the beneficiaries. This finding corroborates that of Kehinde *et al.*, (2011), Appah *et al.*,(2012) and Imai *et al.*, (2010) on the study of analysis of microfinance and poverty reduction in Osun and Bayelsa State. The study found out that microfinance had positive effect on the beneficiary households' poverty status

4.5 Effect of Microfinance Scheme on Poverty Alleviation

The average treatment test was used to determine the effect of microfinance scheme on poverty alleviation among fish farmers in the study area. The Propensity score estimation using different treatment method is presented in Table 4.6

Table 4.6: Effect of Microfinance Scheme on Poverty Alleviation among Fish Farmers

Matching method	Outcome indicator	ATE	t-value
Propensity score matching	Poverty status	0.2820	2.20**
Nearest neighbour matching	Poverty status	0.2080	2.45**
Radius matching	Poverty status	0.1709	2.65***
Kernel matching	Poverty status	0.1871	1.95*

Source: Field survey, 2021.

***, ** and * implies significance at 1%, 5% and 10% levels of probability.

ATE = average treatment effect on the treated

The result from Table 4.6 shows that all the matching methods indicated a significant average treatment effect. Specifically, it was the radius matching method that gave the best result in terms of significance level. Therefore, the result of the radius matching method was adopted. It revealed that the estimated average treatment effect of microfinance credit

scheme on poverty alleviation among fish farmers was 0.1709 which was significant at 1% level of significance. This result shows that microfinance credit scheme had positive and significant effect on poverty alleviation of fish farmers in the study area. The finding of this study corroborated with the findings of Kehinde *et al.* (2011) on the study of impact of microfinance on poverty alleviation in Lagos State. The study found out that microfinance had positive and significant effect on poverty alleviation. The finding also corroborates that of Rajendran and Raja (2010) on the impact of microfinance on poverty alleviation. It was found out that microfinance is effective in alleviating poverty.

4.6 Factors Hindering Small Holder Fish Farmers' Access to Microfinance Credits

The factors considered hindering small scale fish farmers' access to microfinance credits scheme and the responses of the respondents based on their agreement or disagreement are as tabulated in Table 4.7

Table 4.7: Factors hindering small scale fish farmers' access to microfinance credits

Problems	Frequency*	Percentage	Rank
High interest rate charges by Microfinance Banks (MFBs)	214	91.5	1
Types of collateral requested by MFBs and conditions attached	207	88.5	2
Amount of loan provided by MFBs	119	50.9	3
Delays in processing loans by the MFBs	108	46.2	4
Unavailability of MFBs in all localities	28	12.0	5
Activities of community leaders and politicians	3	1.3	6

Source: Computations from Field survey, 2021 responses recorded

Note: * Implies multiple

The result in Table 4.7 shows that the high interest rates charged by MFB was the major problem hindering farmers access to microfinance scheme. Over 90% of the respondents alluded to this. This corroborates the findings of Biam *et al.* (2010) and Badiru (2010) who also find out that high interest rate was the major problem hindering small scale farmers' access to microfinance credit.

Also, type of collaterals requested by MFBs and conditions attached was also considered a major constraint hindering farmers access to microfinance credit scheme as 88.8% of the respondents sampled agreed that the type of collateral requested and condition attached hindered access to microfinance credit scheme in the study area. This implies that majority of the farmers were unable to meet up with the stringent required and collateral requested from them before accessing loan which result to farmers unable to meet their credit needs for farm production. This result corroborate with the findings of Biam *et al.* (2010) and Okojie *et al.* (2010) who find out that the conditions given by the banks hinders farmers access to bank credit.

Amount of loan provided by MFBs was also considered a problem hindering farmers access to the microfinance credit scheme as 50.9% of the respondents agreed that the amount of loan provided hinders farmers from the credit scheme. This implies that farmers were offered lower amount to what they expected which result to farmers unable to meet up with their credits needs for farm productions. This result supports the finding of Olawuyi *et al.* (2010) who found out that small amount of credit offered to farmers by MFSs discourages the farmers from the scheme.

The delay in processing loan was also considered a problem hindering farmers access to the microfinance credit scheme as 46.2% of the fish farmers attest to this claim. This may be as a result of slow operations of the MFBs compared to the commercial bank due to inadequate investment in Information and Communication Technology (ICT) infrastructure to ensure smooth operations. This finding agrees with the finding of Biam *et al.* (2010) who also found out that delay in processing loan hinders farmers from the credit scheme.

Unavailability of MFBs in all localities was also considered a problem hindering farmers access to the microfinance credit scheme as 12.0% of the respondents asserted to this claim. This implies that farmers are of the opinion that MFBs have not reached some farmers in need of their services in the study area. This finding corroborates the finding of Badiru (2010) who noted that location of banks in urban centers limited some farmers access to the scheme.

Activities of community leaders and politicians were the least constraints hindering farmers access to microfinance credit scheme with 1.3% of respondents agreeing to this. These people were to influence the activities of the banks in the communities but instead hinder farmers' access to services of the banks. This result agrees with the finding of Okpara (2010) who notes that interference of board members and politicians affects performance of MFBs.

4.7 Test of Hypothesis

A summary of the paired t-test which was used for computation to test the hypothesis is presented in Table 4.8.

Table 4.8: Test of significant differences between the farm income of the beneficiary and non-beneficiary small scale fish farmers or microfinance credit scheme

Paired Differences	Mean	Std. Deviation	Standard Mean Error	t_{cal}	$t_{critical}$	Decision
Beneficiaries Non-beneficiaries	2245202	732930.8	67759.48	33.135***	2.364	Reject

Computations from Field survey, 2021

*** Implies statistically significant at 0.01 probability level, 116 df

The result in Table 4.8 shows that the calculated t-statistic of 33.135 is greater than the t-critical value of 2.364 at 0.01 level of significance and 116 degrees of freedom. Since t_{cal} was greater than t_{tab} , the study hereby rejects the null hypothesis and accepts the alternative that there was a significant difference between the income of beneficiaries and non-beneficiaries of microfinance credit scheme. This implied that the income realized by the beneficiaries was higher than that of the non-beneficiaries.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This study shows that the beneficiaries of microfinance credit realize more income compared to the non-beneficiaries. Also the non-beneficiaries (53.85%) lived below the poverty line than the beneficiaries (36.75%) in the study area. This implies that the microfinance credit scheme affords the beneficiaries higher level of income with better purchasing power to meet daily needs and enjoy better standard of living. The study also shows that microfinance credit scheme has significant effect on the income of the beneficiaries than the income of the non-beneficiaries. This study thereby conclude that the Microfinance credit scheme increases the income of the beneficiary farmers and thereby reduces poverty in the study area but was unable to bring them all out of poverty as there were still some living in poverty in the study area.

5.2 Recommendations

Based on the findings of this study, the following recommendations were suggested as means of using microfinance banks for poverty alleviation.

1. Since microfinance was found to reduce poverty among farmers in the study area, provision of funds to microfinance banks for on-lending to farmers will go a long way to further reduce poverty I the study area. Government and private investors should invest more in the scheme by establishing more MFBs to reach out to larger populations in the state, especially in the study area.

2. There is need for government and the Central Bank of Nigeria (CBN) to boost lending to the MFIs to an extent so that the MFIs can lend higher amount of credit to the farmers. Reduction in bank exposures to credit by lending small amount to farmers with short tenor for repayment affects the amount obtainable by the farmers for their farm operations.

3. High interest rate was a major factor hindering farmers' access to microfinance credit. There is need to reduce the interest rate on borrowing so as to enable more farmers have access to the credit scheme to enable them improve their standard of living. CBN should strive towards reducing interest rate offered by these lenders so as to encourage more to benefit for improved productivity.

4. The Microfinance credit scheme did not totally eradicate poverty in the study area as there were still some of the beneficiaries who were living in poverty but when MFIs is targeted at reducing poverty by involving other sector such as development of infrastructural facilities, educational facilities would help to reduce poverty to minimum.

5. There is need to involve other stakeholders such as co-operative groups in the scheme to ensure better delivery of funds. They would serve as an intermediary between the bank and the farmers and also serve as an adviser on better use of fund as well as on repayment, refund of the credit loaned to them.

5.3 Contributions to Knowledge

This study contributes to the body of knowledge on the field of microfinance credit on poverty and income inequality. The study will be of help to Microfinance Institutions

which provide financial services to their clients, policy makers and the academia. The following are the specific contributions of our study:

1. Though microfinance credits are important in the poverty alleviation in Nigeria; however, other measures such as boosting agricultural production and taking appropriate steps in enhancing per capita income will equally help in boundless dimension in reducing poverty in Nigeria.
2. One of the major contributions of the study is that microfinance credit demand is interest rate insensitive.
3. The study provided evidence on the effect of microfinance credit on the poverty status of the farmers and income inequality in the study area.
4. The study added literature to the features of Microfinance Credit Scheme in Nigeria compared to microfinance practice elsewhere in the world.
5. This study used household per capita income as a proxy measuring poverty status. The previous studies in the literature used poverty headcount ratio to measure poverty.

REFERENCES

- Abraham, T.W. (2018). Estimating the effects of financial access on poor farmers in rural northern Nigeria. 4(25). <https://doi.org/10.1186/s40854-018-0112-2>
- Abula, M. & Ediri, A. E. (2013). An evaluation of the amount of credit obtained by rural farmers and its determinants from the microfinance banks in Kogi State, Nigeria. *Issues in Business Management and Economics*, 1(7), 184 – 192.
- Adebayo, C.O., Akogwu, G.O., and Saleh, M.K.(2011). Comparative analysis of cooperative and non- cooperative maize farmers in Chikun Local Government Area, Kaduna State. *Journal of Agriculture, Forestry and the Social Sciences*, 9(1), 98-102.
- Adebo, G..M. & Ayelari, T..A. (2011). Climate change and vulnerability of fish farmers in Southwestern Nigeria. *African Journal of Agricultural Research*, 6(18), 4230-4238.
- Agwu1, N. M. & Oteh, O. U. (2014). Analysis of income inequalities and food security among farmers in Abia State, Nigeria. *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development*, 14(3), 35-84.
- Akanji, O. O. (2008). Microfinance as a strategy for poverty reduction, *CBN Economic and Financial Review*, 39(4), 111-134.
- Akerele, E. O., Ambali, O., & Oluwasanya, O. P. (2020). Assessment of income inequality among farming households in Ogun State, Nigeria. *Noble International Journal of Agriculture and Food Technology*, 02(03), 16-24.
- Akram, M., & Hussain (2011). The Role of microfinance in uplifting income level: A study of District Okara.
- Alex, A. K. (2014). Causes of poverty in Africa: A review of literature. *American Journal of Social Science*, 3(7), 44-53.
- Aminu, S. & Samuel, A. A., (2015). Microfinance impact on agricultural production in developing countries: A study of the Pru district in Ghana. *International Journal of Academic Research and Reflection*, 3(3), 114-125.
- Andrews, S. (2015). Role of microfinance institutions in poverty reduction in upper west region: A Case Study of The Wa Cooperative Union. *International Journal of Academic Research in Business and Social Sciences*, 5(5), 19-20.
- Anyaeibu, C. N., Ibekwe, U. C., Odii, M.A.C.A., Ehirim, N.C. & Chikezie, C. (2019). Analysis of income distribution patterns of broiler farmers in Imo State, Nigeria.

- Journal of Agriculture and Food Sciences*, 17(2), 116 – 134.
<https://dx.doi.org/10.4314/jafs.v17i2.10>
- Appah, E. S., John, M. & Soreh, W. (2012). An analysis of microfinance and poverty reduction in Bayelsa State of Nigeria. Kuwait *chapter of Arabian Journal of Business and Management Review*, 1(7), 38-53.
- Asiama, J. P. & Osei, V. (2007). Microfinance in Ghana: An overview. Economics West Institutute, Ghana: Bank of Ghana Research paper, 1-30.
- Aterido, R., T. & Lacovone, L. (2011). “Gender and finance in sub-Saharan African: are women disadvantaged?.” policy research working paper 5571. Washington DC: The World Bank, 3(6), 41-53
- Audu, M. L. & Achegbulu, J. O. (2011). Microfinance and poverty reduction: The Nigerian experience. *Journal of Canada International Business and Management*, 3(1), 13-24.
- Awojobi, O., & Bein, M. A. (2011). Micro financing for poverty reduction and economic development; Nigeria. 16-20.
- Ayinde, I. A., (2013). Analysis of poverty level among farmers in Ogun State, Nigeria, *Asset Series A*, 3(3), 27-35.
- Badiru, I. O. (2010). Review of small farmers access to agricultural credit in Nigeria. Nigeria strategy support program (NSSP), IFPRI, background paper no. NSSP 025. 1-9.
- Bakare, A. S. (2012). Measuring the income inequality in Nigeria: the Lorenz curve and Gini co- efficient approach. *American Journal of Economics*, 2(1), 47-52 DOI: 10.5923/j.economics.20120201.06
- Biam, C. K., Age, A.I. & Asowa, B. C. (2010). Contribution of Microfinance Banks to Financing Small Holder Agriculture in Zango Kataf Local Government Area of Kaduna State. In: Nmadu, J. N, M. A. Ojo, U. S. Mohammed, K. M. Baba, F. D. Ibrahim and E. S. Yisa(eds) *Commercial Agriculture, Banking Reforms and Economic Downturn: Setting a New Agenda for Agricultural Development in Nigeria*. Proceedings of the Annual Conference of National Association of Agricultural Economic s, 30th Nov-3rd Dec 2010 held at FUT, Minna, Niger State. Pp103-108.
- Brummett, R. E., Youaleu, J. N. & Tiani, A. M. (2010). Women’s traditional fishery and alternative aquatic resource livelihood strategies in the southern Cameroonian Rainforest. *Journal of Fisheries Management and Ecology*, 17, 221 – 230. Retrieved from <http://www.researchgate.net>.

- Central Bank of Nigeria (2011). Microfinance policy, regulatory and supervisory framework for Nigeria. Abuja, December.
- Chow G. C. (1960). Tests of equality between Sets of coefficients in two linear regressions. *Econometrica* 28 (3), 591–605. doi:10.2307/1910133.
- Chowdhury, A. (2009). Microfinance as a poverty reduction tool— A critical assessment. DESA Working Paper No. 89, 20-35
- Development Initiatives (DI). (2016). Definitions and measures of poverty; Briefing Nairobi. Retrieved from <http://devinit.org/wpcontent/uploads/2016/07/Definitions-and-measures-of-poverty.pdf>
- Effiong, E.O. (2005). Efficiency of production in selected livestock enterprises in Akwa Ibom State, Nigeria. Unpublished Ph.D Dissertation, Department of Agricultural Economics, Michea Okpara University of Agriculture, Umudike, Nigeria, 16-36.
- Egboro, E. M. (2015). Creation of Microfinance Banks in Nigeria: What is Their Main Object? *British Journal of Economics, Management & Trade*, 7(3), 158-174.
- Ehirim, N.C., Rhaji, M.A.Y., Oguoma, N.N.O., & Onyeagucha, S.U.O. (2017). Assessment of poverty period of FADAMA III participants in Imo State, Nigeria. *Asian Journal of Agricultural Extension Economics & Sociology*, 15(4), 1-13.
- Emefesi, B. O & Yusuf, B. (2014). Accesss and impact of microcredit on poverty alleviation among farmers in Kirfi local government area of Bauchi State Nigeria. *Journal of Agriculture and Veterinary Science*, 7(11). 30-35.
- Enimu, S., Eyo, E. O. & Ajah, E. A. (2017). Determinants of loan repayment among agricultural microcredit finance group members in Delta state, Nigeria. *Journal of Agricultural Economics, Extension and Rural. Development*, 3(21), 5-9, doi:10.1186/s40854-017-0072
- Ettah , I. O., Emmanuel, E. A., Ikutal , A. & Ubi, G. M . (2020). Determinants of poverty status among crop and fish farmers in Southern Nigeria. *Annual Research & Review in Biology*, 35(3), 87-96. doi:[10.9734/arrb/2020/v35i330203](https://doi.org/10.9734/arrb/2020/v35i330203)
- Fasoranti, M.M. (2015). Gender differentials in household poverty reduction activities in Ondo State, Nigeria. *International Journal of Academic Research in Economics and Management Sciences*, 4(2) 226-362. dOI:10.6007/IJAREMS/v4-i2/1750
- Filli, F. B., Onu, J. I., Adebayo, E. F., & Tizhe, I. (2015). Factors influencing credits access among small scale fish farmers in Adamawa State, Nigeria . *Journal of Agricultural Economics, Environment and Social Sciences*, 1(1), 46–73.
- Food and Agriculture Organization (FAO). (2015). The economic lives of smallholder farmers. Retrieved from <https://www.fao.org/3/i5251e/i5251e.pdf>.

- Foster, J., Greer, J. & Thorbecke, E. (1984). A class of decomposable poverty measures. *Econometrica* 52, 761–776
- Gini, C. (1921). Measurement of inequality and incomes. *The Economic Journal*, 3(1) 124–126.
- Girei, A., Dire, B., Iliya, M. M. & Salihu, M. (2013). Analysis of impact of national fadama II facility in alleviating poverty on food crop farmers in Adamawa State, Nigeria. *Global Journal of Agricultural Research*, 1(3), 8-15.
- Iheke, O. R. (2010). Impact of migrant remittances on efficiency and welfare of rural smallholder arable crop farmers households in South Eastern Nigeria. Unpublished Phd Thesis, Michea Okpara University of Agriculture, Umudike, Nigeria, 128-236.
- Iheke, O. R., Okozie, C. A., & Onyekanma, A. O. (2011). Impact of HIV/AIDS on the productivity of farm households in Abia State, Nigeria. Retrieved from http://www.addis2011.inpri.info/2011/10papers_3B_Iheke.
- Imai, K. S., Arun, T. & Annim S. K. (2010). Microfinance and Household Poverty Reduction: New Evidence from India. Research Institute for Economics and Business Administration, Kobe University, Japan. 3(5), 18–22.
- International Development Association (IDA) (2023). Agriculture: An engine for growth and poverty reduction. Retrieved from <http://www.worldbank.org/ida>.
- Irobi, N. C . (2008). Effect of Microfinance on Poverty Alleviation: A case of Obazu progressive women association (Mbieri), Imo state, Nigeria. 3(6), (533- 547).
- Javid, A. Y. & Abrar, A. (2015). Microfinance institutions and poverty reduction: A cross Regional Analysis. *The pakistian development review*, 54(4), 371-387.
- Joseph, N. T., Alege, P. O. & Felicia O. O. (2016). Microfinance and micro-enterprise growth in Nigeria. *Lagos Journal of Banking, Finance & Economic*, 3(1), 86-101.
- Kehinde, A.I., Akintola, J.O., Awoniyi, O.A. & Aderinwale, E.O. (2011). Effect of Microcredit on Household Food Poverty Status in Iwo area of Osun State. In Nigeria. In: Nmadu, J. N, M. A Ojo, U. S Mohamed, K. M Baba, F. D. Ibrahim and E. S. Yisa (eds) Commercial Agriculture, Banking Reforms and Economic Downturn: Setting a New Agenda for Agricultural Development in Nigeria. Proceedings of the 11th Annual Conference of National Association of Agricultural Economists, 30th Nov – 3rd Dec 2010 held at FUT, Minna, Niger State, Pp 103-108.
- Kharas, H., Hamel, K., & Hofer, M., (2018). The start of a new poverty narrative. Retrieved from <https://www.brookings.edu/blog/futuredevelopment/2018/06/19/the-start-of-anew-poverty-narrative>.

- Kiplimo, J. C., Ngenoh, E & Bett, J. K. (2015). Evaluation of factors influencing access to credit financial services: evidence from smallholder farmers in Eastern Region of Kenya. *Journal of Economics and Sustainable Development*, 6(7), 97 – 106.
- Ledgerwood, J., Earne, J. & Nelson, C. (2013.) *The New Microfinance Handbook* (Eds.): *A financial market system perspective*. World Bank Publications.
- Leticia, A. A. (2012). Microfinance a means to poverty alleviation: A case of Masara N'Ariziki Farmers Association. A Thesis Submitted To The Institute Of Distance Learning, Kwame Nkrumah University Of Science And Technology.
- Mecha, N. S. (2017). Effect of microfinance on poverty reduction: A Critical Scrutiny of Theoretical Literature. *Global Journal of Commerce and Management perspectives*, 7(2), 16-33.
- National Bureau of Statistics (NBS) (2021). Nigerian Poverty Profile Report Abuja. 1-10. Retrieved from <https://babbangona.com/fish-farming-in-nigeria>.
- National Population Commission (NPC) (2022). Niger State annual change in population density. Retrieved from <http://citypopulation.de>
- Niger State Agricultural Data (2012). Niger State Bureau of Statistics. Retrieved from <http://www.igeriastat.gov.ng>
- Nosiru, P. M. (2010). Microcredits and agricultural productivity in Ogun State, Nigeria. *World Journal of Agricultural Sciences*, 6(3), 290-296.
- Oba, A. A., David, A. Q. & Henry, O. M. (2019). The impact of micro credit finance on poverty alleviation in Ogun State. *International Journal of Development Strategies in Humanities, Management and Social Sciences*, 9(1), 239-242.
- Okafor, L. G., Ezeaku, H. C. & Ugwuegbe, S. (2016). Microcredit and poverty reduction: A Case of Nigeria. *International Journal of Multidisciplinary Research and Information*, 18, 230–235.
- Oke, F. O., Kiyesi , C. & Akerele, D. (2021). Socioeconomic correlates of catfish production status in Oyo State, Nigeria. *Agricultura tropica et subtropica*, 5(4), 184–191, doi:10.2478/ats-2021-0019
- Okojie C., Monye-Emina A., Eghafona K., Osaghae G. & Ehiakhamen J. O. (2010) Institutional environment and access to microfinance by self-employed women in the rural areas of Edo State. *NSSP Brief No. 14*. Washington. D.C.: International. Food Policy Reserch Institute, 13-18.
- Okpara, G. C. (2010). Microfinance banks and poverty alleviation in Nigeria. *Journal of Sustainable Development in Africa*, 12(6), 177-191.

- Olawuyi, S. O., Olapade-Ogunwole, F., Fabiyi, Y. L., & Ganiyu, M. O. (2010). Effect of Microfinance State In: Nmadu, J. N, M. A. Ojo, U. S. Mohammed, K. M. Baba, F. D. Ibrahim and E. S. Yisa(eds) Commercial Agriculture, Banking Reforms and Economic Downturn: Setting a New Agenda for Agricultural Development in Nigeria. Proceedings of the *Annual Conference of National Association of Agricultural Economics*, 30th Nov-3rd Dec 2010 held at FUT, Minna, Niger State. 12-16.
- Oruonye, E. D. & Musa, Y. N. (2012). Challenges of small scale farmers access to micro credit (Bada Kaka) in Gassol LGA, Taraba State, Nigeria. *Journal of Agricultural Economics and Development*, 1(3), 62-68.
- Osamwonyi, I. O. & Obayagbona, J. (2012). The Role of microfinance banking in the development of the Nigerian economy. *Finance & Banking Review*, 6(1&2), 46-66.
- Oyakhilomen, O. & Zibah, R. G (2014). Agricultural production and economic growth in Nigeria: Implication for rural poverty alleviation. *Quarterly Journal of International Agriculture*, 53(3), 207-223.
- Pollinger, O. & Cordero, G. (2017). The question of sustainability for microfinance institutions in Africa. *Journal of Small Business Management*, 45 (I), 23-41.
- Raheem, S, Ayeni, J. O & Fashedemi, A. O (2014). Easing the “disease” of poverty in Nigeria. *developing Country S\studies*. 4(19), 345-386.
- Rahman, M. M. (2010). Islamic micro-finance programme and its impact on rural poverty alleviation. *International Journal of Banking and Finance*, 7(1), 199 -138.
- Rajendran, K. & Raja, R. P. (2010). Impact of microfinance on poverty: An empirical study on the attitude of self-help group Leadersin Vellore District (Tamil Nadu, indian). *Global Journal of Finance and Management*, 2(1), 59-68.
- Raphael, G., Dorcas, O., & Kwadwo, B. Y. (2013). The relationship between loan default and repayment schedule in microfinance institutions in Ghana: A case study of Sinapi Aba Trust. *Research Journal of Finance and Accounting*, 4(19), 2222-2847.
- Roadman, I. (2012). The Potentials of Public-Private Partnerships in Microfinance Delivery. A paper presented at *International Microfinance Conference Abuja*, Nigeria on January 2008
- Samson, A. & Obademi, O. (2018). The determinants and impact of access to agricultural credit on productivity by farmers in Nigeria; Evidence from Oyo State, Nigeria. *Advances in Social Sciences Research Journal*, 5(3), 252-265.
- Schurmann A. T. & Johnston, H. B. (2009). The Group-lending Model and Social Closure: Microcredit, Exclusion, and Health in Bangladesh. *Journal of Health Population Nutrition*, 27(4), 518–527. doi:[10.3329/jhpn.v27i4.3398](https://doi.org/10.3329/jhpn.v27i4.3398)

- Taiwo, J. .N. & Agwu, M. E. (2016). Problems and Prospects of Poverty Alleviation Programmes in Nigeria. *International Journal of Business and Management Review*, 4(6), 18-30.
- Tehulu, T. A. (2013). Determinants of Financial Sustainability of Microfinance Institutions in East Africa. *European Journal of Business and Management*. 5(17), 2222-2839.
- Teng, F., Jiankun, H., Xunzhang, Pan. & Zhang, C. (2011). Metric of carbon equity: Carbon Gini index based on historical cumulative emission per capita. *Adv. Clim. Change Res.*, 2(3), doi:10.3724/SP.J.1248.2011.00134.
- Ubani, A. C. (2012). The Role of Microfinance Banks In The Alleviation of Poverty in Nigeria : A Case Study of Oha Microfinance Bank Ogui Road Branch, Enugu State. 25-35.
- Ugochukwu, M. N. & Onochie, G. (2017). Impact of Micro-Credit on Poverty Reduction in Nigeria. *Journal of Arts, Management and Social Sciences*, 2(2)56-70.
- Usifoh, K. S. & Ezeanyeji, C. I. (2017). Impact of Microfinance Banks on Poverty Alleviation and Economic Growth in Nigeria. *Journal of social development*, 6(5), 88-95. doi:10.12816/0042815.
- World Bank (2018). Piecing together the poverty puzzle. poverty and shared prosperity report. Washington DC: The World Bank. Retrieved from <https://babbangona.com/fish-farming-in-nigeria>.
- World Bank. (2011). Africa's future and the World Bank's support to it: Africa Regional strategy. Washington, DC: World Bank, 116-123.. Retrieved from <https://documents1.worldbank.org/curated/en/395991468007775257/pdf/844570WPOREPLA00Box382131B00PUBLIC0.pdf>
- World Bank. (2019). Poverty & equity brief in Nigeria. Retrieved from www.worldbank.org/poverty
- World Bank. (2020). Nigeria releases new report on poverty and inequality in country. Retrieved from <https://www.worldbank.org/en/programs/lms/brief/nigeria-releases-new-report-on-poverty-and-inequality-in-country>.
- World Bank. (2022). [Nigeria Poverty Assessment: A Better Future for All Nigerians](https://www.worldbank.org/en/news/press-release/2022/03/21/afw-deep-structural-reforms-guided-by-evidence-are-urgently-needed-to-lift-millions-of-nigerians-out-of-poverty). Retrieved from <https://www.worldbank.org/en/news/press-release/2022/03/21/afw-deep-structural-reforms-guided-by-evidence-are-urgently-needed-to-lift-millions-of-nigerians-out-of-poverty>.

**FEDERAL UNIVERSITY F TECHNOLOGY, MINNA
SCHOOL OF AGRICULTURE AND AGRICULTURAL TECHNOLOGY,
DEPARTMENT OF AGRICULTURAL ECONOMICS AND FARM
MANAGEMENTS.**

**Questionnaire on Effect of microfinance credit on poverty and income inequality of
small-scale fish farmers in Niger State, Nigeria**

Questionnaire numberPhone Contact of Enumerator

Dear respondents,

I am a Postgraduate Student in the above Department and institutional affiliation undertaking a research study on Effect of Microfinance Credit on Poverty and Income Inequality of Small-Scale Fish Farmers in Niger State, Nigeria.

Kindly assist me in completing this questionnaire. The information being required in this questionnaire is purely for research purpose only and as such shall be treated confidentially.

You are requested to tick or comment freely on each of the questions.

MOSHOOD Halimat Abisola
M.TECH/SAAT/2018/8173.

SECTION A: SOCIO-ECONOMIC CHARACTERISTICS OF THE RESPONDENTS

1. Name of village/town
2. Name of respondent
3. Age of respondentyears.
4. Gender of respondent: (a) Male () (b) Female ().
5. Educational qualification of respondents?

- a. Primary education ()
 - b. Secondary education ()
 - c. Tertiary education ()
 - d. Adult education ()
 - e. Qur'anic education ()
 - f. None at all ()
6. Marital status: Single (); Married (); Divorced (); Widowed / Widower
7. Household size: 1-5 (); 6 and above ()
8. What is your Primary occupation? (a) Fishing (); (b) Farming (); (c) Trading (); (d) Civil servant (); (e) Artisan (); (f) Civil servant (); (g) Others specify
9. If fishing is your primary occupation, for how long have you been fishing?
10. Besides fishing, which of the following secondary occupation are you engaged in and how much do you realize?
- i. Crop farming
 - ii. Hunting
 - iii. Hand craft
 - iv. Artisan e.g. mechanic
 - v. Civil service
 - vi. Transportation business
 - vii. Processor of farm produce
 - viii. Trading
 - ix. Farm labourer

x.Others, please specify

SECTION B: PRODUCTION INPUT INFORMATION

11. Do you have access to agricultural credit facilities? Yes () No ()

12. If yes from the above, what are the sources of your consumption credits? (a) Microfinance Banks () (b) Commercial Banks () (c) Cooperative Groups () (d) Family and Friends ()

13. If yes to question 12 above, what are the sources of capital for your fish farming business (please tick as many sources)

- a) Borrowed from Commercial Banks
- b) Borrowed from Microfinance Banks
- c) Borrowed from Cooperatives
- d) Own Savings
- e) Borrowed from friends/relatives
- f) Borrowed from thrift collectors

14. If borrowed from Microfinance Banks, when (year) did you borrow, how much did you borrow and what was the interest charged? When (years).....

Amount (#)..... Interest (%).....

15. Apart from farming, which of the following items did you spend the loan collected on?

S/No	Items	Amount spent (₦)
1	PHCN bills (Electric supply)	
2	Children's school fees	
3	Water Bills	
4	Hospital Bills	
5	House Rent	
6	Clothing	
7	Purchase of Car, Motor cycle or Bicycle	
8	Marriage, Naming Ceremony or Burial Ceremony	

16. For how long have you been in microfinance scheme? Please indicate in years.....
17. How much did you receive as loan during the last fishing season?in Naira
18. Do you belong to any fish farmer's association? (a) Yes () (b) No ()
19. If yes from question 18 above, please indicate the associations you belong to
20. Do you have access to any extension services? (a) Yes () (b) No ()
21. If yes to question 20 above, how many times were you visited by an extension agent?
22. What farm input did you use? Please provide the following information about the inputs used in farming.

S/No	Inputs	Amount spent per Unit (₦)	Total Amount (₦)
1	Fingerlings		
2	Ponds		
3	Water		
4	Feeds		
5	Hook		
6	Worm		
7	Fertilizer		
8	Veterinary Cost		
9	Harrow		
10	Basket		
11	Matchet		

SECTION C: HOUSEHOLD EXPENDITURE

23. How much do you spend daily on the food items consumed in your household?

S/No	Food Items	Average amount spent daily on food items (₦)
1	Rice	
2	Beans	
3	Cassava	
4	Yam	
5	Maize	
6	Vegetables	
7	Others specify	

24. How much do you spend monthly on each of the following items?

No	Items	Average amount spent per month (₦)
1	House rent	
2	Clothing	
3	Children's school fees	
4	Medication	
5	PHCN bills	
6	Water bills	
7	Other (specify)	

SECTION D: CROP OUTPUT AND INCOMES REALIZED

25. What is the total output and income realized from sales of the fish harvested?

S/No	Fish Species	Total output (Kg)	Price per kg	Total income from sales (₦)
1				
2				
3				
4				

SECTION E: FACTORS HINDERING FARMER'S ACCESS TO MICROFINANCE CREDIT SCHEME

26. Factors listed below are considered to hinder farmer's access to microfinance credit scheme. Please suggest by ticking appropriately whether you Agree (A), Unsure (U) or disagree to the factors below.

S/No	Factors	A	U	D
1	High interest rate charges by the Microfinance Banks (MFBs)			
2	Delays in processing loans by the MFBs			
3	Types of Collaterals' requested by MFBs and conditions attached			
4	Amount of loan provided by MFBs			
5	Unavailability of MFBs in all localities			
6	Activities of community leaders and politicians			

Please specify other factors

.....